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ORIGINAL ARTICLES.

HOME INFECTION IN TUBERCULOSIS AND HOW TO NEUTRALIZE ITS DANGERS.

By S. LYLE CUMMINS,

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As the result of an enquiry carried out by my colleagues on the medical staff of the Welsh National Memorial Association, it was possible for me to publish in my Annual Report for the year ended March 31, 1924, certain figures bearing on previous exposure to infection as a factor in the history of children found suffering from tuberculosis. The results, together with some figures relating to adult patients between fifteen and twenty-five years of age, are here reproduced as a basis for the remarks which I wish to make upon the importance of home infection in the production of the disease.

The figures as they stand in the table on p. 66 are striking, and appear to me to justify the view that exposure to contact with infected persons in the home during childhood is a very serious danger against which our best efforts should be directed. It is realized, however, that this opinion may be questioned on the ground that a group of non-tuberculous children, if their histories were carefully investigated, might afford an equally high proportion of individuals with a record of exposure to infection during early life. I am not in a position to give statistics derived from Wales upon this latter point, but very interesting figures bearing on the question have recently been published by Dr. Godias J. Drolet,[1] who shows that in his records at the Bellevue

[1] Godias J. Drolet: "The Inheritance Factor in Tuberculosis," *American Review of Tuberculosis*, vol. x., No. 3, November, 1924.

Hospital, New York, a history of exposure to tuberculous infection was as frequent amongst non-tuberculous patients as amongst those suffering from the disease. These figures, however, even if applicable to this country, which is open to doubt in view of the very different economic conditions prevailing in New York City, do not settle the question, as the mere absence of developed disease does not exclude infection. It may be, for instance, that many of the children classified as non-tuberculous are nevertheless destined to develop the disease in later life.

TABLE SHOWING THE NUMBERS AND PERCENTAGES OF CASES IN CHILDREN AND YOUNG ADULTS HAVING PREVIOUS CONTACT WITH INFECTION.

Pulmonary Cases.	*Total Number investigated.*	*Total with History of Previous Contact.*	*Percentage with History of Previous Contact.*
Cases under fifteen years (Dr. Watson)	100	65	65
Cases under fifteen years (Cardiganshire; Dr. Charles Lloyd)	256	185	72
Cases under fifteen years (reported by other observers)...	213	134	62
Cases fifteen to twenty-five years (females)	344	174	50
Cases fifteen to twenty-five years (males)	268	75	40
Non-Pulmonary Cases.			
Surgical tuberculosis (children)... ...	166	53	32
Non-pulmonary cases in children (Cardiganshire; Dr. Charles Lloyd) ...	202	99	49

(In over 90 per cent. of these cases the contact was in the home.)

It appears to me that the Welsh figures given in the accompanying table must be regarded as very significant. Out of 256 patients under fifteen years of age in Cardiganshire, no less than 72 per cent. give a history of previous contact with infection, chiefly in the home; and out of a total of 569 children with pulmonary disease, 384, or 67 per cent., give a similar history. It is hardly within the bounds of possibility that such percentages are to be found amongst non-tuberculous children of similar age groups; and the figures would appear to demonstrate that the infected home is an extremely dangerous factor in the production of the tuberculosis of childhood, adolescence, and later life. If this conclusion be accepted, it is to the home that hygienic measures should especially be directed.

Many lines of effort, more or less direct, suggest themselves. One is tempted, for instance, to advocate the removal of infected persons from their homes; but all those with experience know that such a

course is often impossible in individual cases. Again, it may be suggested that children of tuberculous parents should be removed out of reach of contamination by the work of some such organization as the Grancher system; but here, again, practical difficulties usually step in to neutralize what has been found, where applicable, to be an extremely valuable line of prevention. Open-air schools and convalescent camps or hospitals would doubtless be of enormous assistance, but no one can claim that these institutions exist in numbers sufficient to cope with the demand which would arise were such a measure generally applied in this country. In nearly every direction the good advice which we might wish to give appears to be very largely neutralized by practical difficulties of a serious kind. It is necessary, then, to consider what may be done to make the best of a bad situation.

We are up against difficulties of a formidable kind—housing difficulties, financial difficulties, difficulties incident to the natural love and affection of parents for their children, and the difficulties inseparable from ignorance, prejudice, and want. In spite of all these difficulties, much is being accomplished. Apart from the splendid achievements of tuberculosis physicians and other doctors, everyone acquainted with their work must acknowledge the value of the exertions of the health visitors in the larger communities where these trained persons are available; and, again, the assistance rendered by after-care committees is of incalculable value. There is one line of effort, however, which, though not forgotten by hygienists, is still, I think, capable of considerable extension, and that is the intensive education of the tuberculous persons themselves as to the risk they constitute to their dependents and as to the measures which they should adopt to diminish it.

That it is possible for children to live in contact with infected parents and yet remain in good health is demonstrated not only by the researches of Dr. Godias J. Drolet, already referred to, but in a highly interesting manner by the experience of such an organization as the Cambridgeshire Tuberculosis Colony at Papworth,[1] where, according to Dr. Varrier-Jones, not a single case of tuberculosis has yet arisen amongst the children of the colonists living in the village attached to the institution. Here we have an example of what can be done by enlightened supervision and advice. The houses are, of course, superior in many respects to those often occupied by the poorer classes in this country; but, at the same time, they are by no means large, nor are the occupants either wealthier or better equipped than the members of comparative social groups living under ordinary industrial conditions. If it were not for the enlightened supervision of

[1] "Cambridgeshire Tuberculosis Colony: Report of the Executive Committee for 1923," p. 12.

those in charge, the risks to children in a village settlement for the tuberculous would be greater than those that arise in ordinary village life. What we have to fight against is the intensive infection brought about by the thoughtless and uncontrolled contact of tuberculous parents and their children, augmented, perhaps, by poverty and want, which obliges the patients and the children to occupy the same sleeping apartment or even the same bed, aggravated as a rule by carelessness in the disposal of sputum and in the common use of knives, forks, cups, saucers, etc., without thorough cleaning.

It seems to me that a still more intensive effort might be made to bring these points to the notice of persons leaving sanatoria or hospitals and of those infected patients with families attending at tuberculosis institutes and dispensaries for advice and direction; and that general practitioners might become, to a still greater extent than at present, apostles in a movement to diminish the risk of home infection as it bears on the infants and young children destined to be the citizens of to-morrow.

It is a mistake to frighten the general public by always dangling before their eyes the bogey of tuberculosis. To many of them the risk is non-existent, and constant "nagging" only leads to weariness and apathy. But in the case of infected persons actually capable of spreading the disease through their own carelessness or through the omission of precautions which may well be within their power, the campaign of education can hardly be too intense. At the same time it must be on practical lines, and it must take into account the actual circumstances of the particular home in question. Very little is likely to be accomplished by eloquent exhortation, but a great deal may be done by discussing in a friendly and helpful spirit the exact circumstances of the patient during a visit to the home, and indicating tactfully what is possible under the circumstances. Judicious help of a material or financial kind may sometimes be necessary to give effect to the recommendations made, and here the funds of after-care organizations may be of great assistance; but much can be accomplished by tact and kindness, which cost nothing and are often of infinite value.

The opinions I have expressed may well be regarded as superfluous in many well-organized areas, where tuberculosis physicians, general practitioners, health visitors, and care committees are already accomplishing wonders on the lines suggested; but few will deny that there are many places where a great deal remains to be done.

Tuberculous persons are the one great source of danger in the spread of tuberculosis. What I advocate is that they may be converted into the front-line troops in our campaign, accepting, as soldiers should, the discipline, the self-abnegation, the constant vigilance exacted from them as the price of victory.

RESEMBLANCES BETWEEN LEPROSY AND TUBERCULOSIS.*

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During my last three years' close study of the literature of leprosy I have been much struck by the many points in which this disease resembles tuberculosis. I desire to direct attention to the chief of these.

Bacteriological Considerations.

The bacilli of the two diseases are first cousins, if not even more closely related; both are acid-fast, single organisms, similar in their morphological and staining characters, and can only be distinguished by the fact that the tubercle bacillus is cultivatable, while it remains doubtful if the lepra bacillus has ever been cultivated. This is an important distinction, indicating that while the tubercle bacillus can survive for a considerable time in a suitable environment, the lepra bacillus cannot do so for more than a very short time, and then only under favourable conditions. Marchoux[1] has shown that the acid-fast organisms met with in rat leprosy cannot survive drying or a temperature of 60° C., and the same is probably true of the human lepra bacillus. The very close relationship of the two organisms is also shown by tuberculin producing reactions in leprosy. Taylor and Malone[2] have recently obtained complement fixation of diagnostic value with the sera of lepers and an antigen composed of tubercle bacilli defatted by Dryer's method. Moreover, I have recently pointed out[3] that leprosy as an indigenous disease is extremely rare among the highly tuberculized races of Western Europe and the temperate zone of North America, with about 90 per cent. of positive von Pirquet reactions in persons over fifteen; is widespread up to about 1 per mille in China, Indo-China, and India, where about half the population give positive von Pirquet reactions; while such parts of the world as Oceania and tropical Africa, where alone the very high leprosy incidence of 5 to 60 per mille occurs, show very low degrees of tuberculization, such as 7 to 15 per cent., indicating that tuberculization appears to afford some immunity against leprous infection; although the reverse is not the case, as phthisis is the commonest fatal complication of leprosy in leper colonies.

* Substance of a paper read at a meeting of the Tropical Diseases Section of the Royal Society of Medicine, January 8, 1925.

Incidence and Climatology.

I have elsewhere shown[4] that a remarkably close relationship exists between high rainfall and heat and leprosy incidence all over the world. I have demonstrated the truth of this statement in a detailed survey of India, indicating the influence of moist heat in favouring the infection of leprosy; which fact I attribute to these factors being favourable to the temporary survival of the lepra bacillus long enough to enable it to gain entrance through the skin of close contacts, probably aided by the frequency of insect bites in such climates affording possible channels of entry. Marchoux has shown that the rat leprosy bacillus is easily inoculable through minute abrasions of the skin, which is also the probable mode of entry of the human bacillus. The large amount of evidence in favour of this mode of infection will be found summarized in the recently published book on leprosy by E. Muir and myself.[5]

I have also studied the incidence of tuberculosis in British colonies in the tropics, and found only a general relationship to heat and moisture, much less close than with leprosy; which is best explained by the observations of Bushnell in the United States and of Lyle Cummins in this country, that the incidence of tuberculosis is greatly influenced by the greater or less degree of tuberculization of the races concerned. I therefore turned to India, where a moderate degree of tuberculization exists. Here a type of pulmonary disease is found which is rather more acute than that met with in Europe, but far less so than in recently infected countries. It is widely distributed, and I have recently[6] shown that the distribution of phthisis in the Indian gaols is closely related to humidity, modified in some instances by the favouring effect of exposure to the humid winds of the monsoon currents, and the protective influence of shelter from such winds, as Gordon[7] previously found in Devonshire, a high incidence of tuberculosis being found in India wherever the uninterrupted moist winds reach, even in areas to which they carry little actual rainfall. This is not the case with leprosy in India, and I suggest that the explanation will be found in the greater resisting power of the tubercle bacillus outside the body allowing a moist wind, apart from much rain, to favour its survival and increase infections; while the less resistant lepra bacillus requires high moisture due to heavy rain to enable frequent infections to take place.

Conditions Influencing Infectivity.

When we turn to the various conditions influencing the frequency of infections, we find a still closer similarity between the two diseases, as illustrated by the following data. Both infections are favoured by overcrowded houses, and both have been introduced to new countries

or races and produced epidemics among them, as in Hawaii and other Oceanic islands with leprosy, and among American Indian and other tribes with tuberculosis. Both diseases were formerly attributed almost entirely to heredity infection, and later to hereditary predisposition, which are now considered of little or no importance.

Susceptibility is greatest in childhood in both, for 37 to 44 per cent. of children brought up with their leper parents for seven to ten years in the Philippines became infected; Bergmann found 40 per cent. of children in tuberculous surroundings became infected within a year. Roussel in Nancy found 37·5 per cent. of the children of tuberculous parents to be infected, and Grancher in Paris has recorded very similar figures, and showed that, if children were removed at an early age from houses with open cases of tuberculosis, only 0·5 per cent. developed the disease, the removal of the children of lepers from their parents at or soon after birth also having proved very effective in many hundreds of cases in India and elsewhere in saving them from infection.

Conjugal infections are comparatively rare in both diseases for the same reason that susceptibility greatly decreases when adult life is reached, data of over 4,000 cases[5] showing that 50 per cent. of infections of leprosy took place by the age of twenty, 67 per cent. by twenty-five, and 75 per cent. by thirty years of age, while only from 1·7 to 6·5 per cent. of the spouses of lepers, in eight series of cases I collected from the literature, developed leprosy. Stephen Rowland[8] in a recent paper quoted nine series of similar data regarding tuberculosis, varying between 1·48 and 8·57 per cent., as well as two series with much higher figures, the accuracy of which he gives reasons for doubting, and he attributes the lowness of the figures to married couples "having passed the age of greatest susceptibility." The close similarity of both childhood and conjugal affections in the two diseases is most striking and suggestive, the only important difference being that children become infected with the tubercle bacillus at an earlier age than with leprosy, which is once more in accordance with the greater dissemination of the organism of tubercle in the environment.

Infective Types.—It is well known that the greatest danger arises from close association with open tuberculous cases discharging large numbers of tubercle bacilli. In leprosy I found that of 113 cases which had given rise to new infections, 94·7 per cent. were of the nodular form, which was thus twenty times as dangerous as the anæsthetic type, and subsequently to my recording these data a committee was appointed to examine the infectivity of 2,501 lepers in the asylums of the Union of South Africa, with the result that 693, or 28 per cent., were found to be uninfective; many were released, and accommodation thus provided for a number of the infective type. As the lepra bacilli escape in infinitely larger numbers from ulcerated skin and nasal lesions

of the nodular form of leprosy than from the nerve form, in whom the bacilli are commonly limited to the deep nerve trunks, the analogy with tuberculosis is once more very close. Nor are these facts of only theoretical importance, as I am very strongly of the opinion that there is far too much compulsory isolation of uninfective lepers (although advanced nerve cases often require institutional care on account of their being crippled by loss of fingers and toes), and far too little removal from crowded houses of the poor of highly infective open advanced pulmonary tuberculosis cases, and I am glad to see this point was brought to the notice of the Minister of Health by a recent deputation of the League of Health.

Paths of Infection.

These probably differ in the two diseases, that of leprosy being through the skin, and tuberculosis by inhalation of the bacilli into the lungs. The work of Kuss, Allbrecht, and of Anthony Ghon on the nearly constant occurrence of primary caseous tuberculous foci in the lungs in the tuberculosis of childhood affords strong evidence in opposition to Calmette's theory of primary infection through the intestestinal route; although in neither disease has the final word been said on this point, as the difference in the distribution of the lesions may depend on the lung tissues being most susceptible to tuberculosis and the deep layers of the skin to leprosy, in which lung lesions very rarely occur. The extremely close similarity between tuberculous lesions of the skin and the early lesions of dermal leprosy is also of interest, both being probably due to primary infections of the skin through inoculation; while, as Marchoux has pointed out,[1] in both diseases the bacilli develop in mononuclear leucocytes, and both produce fatty changes in the affected cells. Both diseases commonly run a chronic course, but may occasionally be much more acute and rapidly fatal.

Prophylaxis and Treatment.

I have dealt with these subjects fully as regards leprosy in my Croonian lectures, so I need only refer to the basal principles here. The cruel customs and prejudices of the Middle Ages regarding segregation of lepers still influence medical practice, although they are gradually giving way in view of the success of the more humane Norwegian measures, which have reduced the number of the lepers there by 95 per cent. since 1856. Efforts are now being made in India and elsewhere to deal with leprosy much more on the lines of tuberculosis by providing sanatorium-like colonies with the best available treatment in place of prison-like asylums without adequate medical attendance; while now that many early uninfective cases are being

attracted by the improved methods of treatment, dispensaries are being organized for attending them as out-patients on the lines of tuberculous ones in this country, the more infective cases being sent to the colonies. Exercise, fresh air, and good diet have been found by Muir to be as important in leprosy as in tuberculosis, and the light treatment is being studied in the Philippines and other places, the experience gained during the last few decades in tuberculosis being thus applied to leprosy.

On the other hand, the success of the line of treatment of leprosy I introduced in 1915, by means of injections of soluble products prepared from the isolated active portion of chaulmoogra, cod-liver and other oils (the technique of which was greatly improved later by Dean and Hollman in Hawaii using ethyl ester chaulmoogrates in place of the sodium salts of the unsaturated fatty acids of chaulmoogra oils at first used by me), led me to apply similar methods to the treatment of tuberculosis, their action being probably through increasing and activating blood lipase, which I found to be very deficient in active leprosy, as it was previously known to be in tuberculosis, leading to dissolution of the fatty coating of the acid-fast bacilli of both diseases. It is already evident that very small doses of sodium morrhuate exert a specific action on tuberculous lesions, but it is still too early to say how far this action can be controlled sufficiently to enable benefit to be obtained in more than a limited proportion of cases, although several workers continue to report promising results; and a new field has been opened up, requiring much patience to explore fully, if we may judge by the history of tuberculin. I have nothing at present to add to the lectures already referred to, except that a convenient stable ethyl morrhuate is now under trial, which appears to be equally suitable for injection without the necessity of spending time in making up fresh solutions of the sodium morrhuate; while other morrhuate compounds are being investigated, which may possibly result in some further advance. I therefore conclude that the close resemblances between leprosy and tubercle as pointed out in this note indicate possible lines of advance through the lessons learned regarding one affection affording suggestions for the application of somewhat similar prophylactic or therapeutic measures to the sister disease.

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SURGERY IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

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In the last few years surgery has commenced to play an important and useful part in the treatment of pulmonary tuberculosis, and it is an interesting fact to observe that no less than 103 years ago an authority writing on this subject stated that, in his opinion "if ever this disease is cured . . . it must be accomplished by mechanical means, or by a surgical operation." This prophecy is now coming to pass in a certain number of cases, and the commencement of the surgical era for the treatment of intra-thoracic tuberculosis really lies in the introduction of artificial pneumothorax.

The Production of Artificial Pneumothorax.

There is, I think, no doubt about the efficiency of artificial pneumothorax, and the success which attends it is so marked that it is being more and more employed. It is, of course, not suitable in every case, and the selection of the cases which are likely to derive benefit from it requires both experience and skill. When it is remembered that the cases which are suitable for operative treatment (other than artificial pneumothorax) are only a selection from those in which for one reason or another artificial pneumothorax has failed, it will be realized that they are not a very large number. As they are, however, the cases which tend as a class to run to chronic cavitation, it will also be seen that they are an important and valuable class to which much benefit can be given. It may therefore be taken as an axiom that a surgical operation for the relief of pulmonary tuberculosis should not be undertaken until an artificial pneumothorax has failed; there being one possible exception to this rule, to which we shall refer later. An artificial pneumothorax, of course, only fails when the visceral and parietal layers have become adherent to one another, and these pleural adhesions are usually seen in two forms: (1) Cases where there are a limited number of firm, round, fleshy cords or bands, clearly visible in an X-ray plate, often an inch or two long, and passing from the visceral to the parietal pleura. These adhesions frequently drag out into their substance portions of infected lung tissue. They permit of the establishment of a certain incomplete degree of pneumothorax, but they completely inhibit anything like a complete collapse of the lung.

(2) Cases where the two layers of pleura are more or less completely fused together all over, so that no free space exists, and no degree of pneumothorax is attainable.

These are the two conditions with which the surgeon is most frequently called upon to deal. The indications for operative treatment are therefore in general much the same as those of an artificial pneumothorax, although they are more rigid and more exact; it may roughly be stated that artificial pneumothorax should be performed upon those cases where one lung appears to be sufficiently good to function by itself, and where the disease on the other side appears to be getting too bad for there to be any reasonable chance of recovery by the ordinary methods of treatment, such as residence in sanatoria, etc. In these cases artificial pneumothorax is attempted before any other operation is considered. The only possible exception to this rule, which we hinted at above, is that rare cases will be seen where the disease in one lung is markedly localized, and where the treatment required is an equally localized collapse. In such a case it may be possible to produce a local collapse of the lung by a surgical operation, whereas a pneumothorax would produce a collapse of the whole lung, and this might be regarded as too large a price to pay for collapse in so localized a type of disease.

Any operation performed upon a tuberculous lung is designed either to produce a permanent collapse, as complete as possible—and this is the type of operation which will be performed in the second class of case described above, where the two pleural layers are inextricably fused—or else it is designed merely to assist in the production of a complete pneumothorax in the first class of case above described, where isolated band-like adhesions exist, by cutting or otherwise doing away with these bands. In this latter case, where the operation is simply to assist in the achievement of a complete pneumothorax, its indications are the same as those of the pneumothorax—no more, and no less. But in the other case, where an irremediable collapse of the lung is to be produced surgically, the indications are even more rigid. For the operation is a much more serious undertaking, and the collapse of the lung will be brought about much more rapidly than in the case of a gradually produced pneumothorax, so that there will be a greater mechanical disturbance and toxæmia produced. There will also be a greater liability to aspiration pneumonia, or tuberculosis in the other lung, or in healthy portions of the diseased lung. But the most important point of all, which renders the selection of cases more critical than those for pneumothorax treatment, is the fact that the lung collapse which the surgeon produces is irremediable. Should an extension of disease threaten in the other lung, there can be no question of re-expanding the diseased lung, as might be done where a pneumothorax is present.

Artificial Pneumothorax with Adhesions.

Let us now consider our first class of case, where the production of a complete pneumothorax is prevented by a few cord-like adhesions visible in the X-ray plate. These cases are not uncommon, and when the cord-like bands are few in number, and not too thick, as shown by the X-ray, they should be cut, and the lung thereby permitted to collapse completely. Though this may be done by an open operation between two ribs, it is far better performed with the thoracoscope, the adhesions being examined by this instrument and cut through one by one under direct vision, either with a tenotome or, better still, with the electrocautery. In this case there is no open operation wound other than the two small punctures made for the introduction of the thoracoscope and of the cautery, while once the adhesions are severed, the lung will collapse completely, and the artificial pneumothorax can be proceeded with.

In the other class of case, where the two layers of pleura are inextricably fused, surgical treatment of a much more complicated and severe character will be required. It is both dangerous and difficult to separate the two pleural layers when densely adherent in this fashion, and no procedure of this kind should be countenanced; so that the operations performed for this condition divide themselves into two separate groups: (*a*) Those which aim at detaching the parietal pleura from the ribs—the two pleural layers remaining fused together—and producing pressure on and collapse of the lung by introducing various substances between the ribs and the pleura which has been stripped off them (in this case no ribs need be removed and no deformity is produced). (*b*) Operations which are designed to remove large portions of the bony wall of the chest, thereby allowing the chest-wall to fall in and the lung to collapse.

Extra-pleural Pneumolysis.

The first type of operation is called an Extra-pleural Pneumolysis. It is done by making an incision between two ribs, which is extended through the intercostal muscles down to, but not through, the parietal pleura; the ribs are forced apart with a rib spreader. The hand is then introduced, and the parietal pleura stripped off the ribs as far as required over the front, sides, back, and apex of the lung. This is very easily done, and produces no shock or bleeding. The lung is then compressed, and the big cavity between the ribs outside and the pleura inside has to be packed with some substance to keep the lung compressed; and it is in the selection of this substance that the chief difficulty of this operation lies. Fat, muscle, gas (air or nitrogen), have all been introduced, and large quantities of sterilized paraffin wax;

but, unfortunately, in many cases it is found that weeks or months afterwards these foreign materials cause trouble by setting up a low grade of infection with sinus formation, which may necessitate their removal. Even when this has had to be done, it is remarkable how much the patients are benefited by the procedure, owing presumably to the temporary compression of the lung. The chief advantages of the operation lie in its ease—the fact that it can be performed in twenty minutes under gas, that no rib is removed, no deformity produced, and practically no shock caused. There is, I think, a future for this operation of extra-pleural pneumolysis, and experimental work is still being undertaken in order to try to obtain a more suitable substance with which to pack the extra-pleural cavity.

Thoracoplastic Operations.

The second type of operation mentioned above, which aims at removing the overlying bony thoracic wall, is known as a Thoracoplasty, and has been performed in several different ways. It is essentially a serious operation, and one which leads to a certain amount of deformity afterwards; but its results are good, its mortality very low, and the patients always pleased with its effects. We have already indicated that the cases subjected to this operation must be critically selected, and special attention paid to the apparently sound lung, as any extension here after the operation is performed will leave us helpless. For an artificial pneumothorax to be performed it is a *sine qua non* that the better lung should be in fairly good condition, and that it must not present any active or extensive disease. But if we intend to perform a thoracoplasty, from which there is no return to the normal, the condition of the better lung must be considered even more carefully; and in this selection it is probable that the greatest help is given by good radiograms. Some Continental authorities do not admit that a thoracoplasty is justifiable in cases of spreading or caseous tuberculosis, and limit its application to the old fibrosed cases with cavity formation, for they demand that there should be evidence of healing power as shown by a retraction and fibrosis of the lung. This is, I think, an unnecessarily severe limitation, for to many cases which are otherwise hopeless a thoracoplasty may offer a chance of life; and in the case of an intelligent patient, we can, I think, justifiably lay the whole picture before him, and let him decide for himself. The most complete thoracoplasty we can possibly perform will probably not produce more than about three-quarters of the collapse that a complete pneumothorax will achieve; the patient will, however, avoid the dangers of pleural complications and the annoyance of continual refills.

The results of thoracoplasty in cases which are carefully selected is excellent and the operation-mortality surprisingly low, being in the case of operators experienced in this type of surgery less than 5 per cent. There are many types of thoracoplastic operations which have been done, but we have in nearly every case operated on the lines laid down by Saugman. In this operation as large portions as possible of the upper ten ribs are removed by a single J-shaped incision at the back, running down from the neck between the scapula and the spine, and its lower end curling round to the front of the chest. The total length of rib removed varies from 35 to 40 inches in different cases; and it is all-important that the first rib should be removed, for otherwise the apex will not collapse properly, nor will the side of the chest descend, this descent of the chest-wall playing a very important part in producing collapse of the lower portions of the lung. The operation can be performed under a local anæsthetic, and is frequently so done by Continental surgeons, but it is undoubtedly easier and better to do it under gas and oxygen with morphia, or under simple ether anæsthesia. Two patients who had had partial thoracoplasties performed under local anæsthesia by eminent Continental surgeons, and on whom I had later to complete the thoracoplasty, had very definite views against the employment of local anæsthesia. It is hardly ever necessary to perform the operation in two stages, and we have only done so on one occasion; but during the operation, should the patient appear to be suffering from severe shock, it is always possible to stop and remove the remaining ribs on another occasion. Following operation, the patient will complain for several days of the most intense pain on coughing and moving unless the intercostal nerves are injected at the end of the operation near the necks of the ribs with 80 per cent. alcohol. If this is done pain and suffering afterwards are surprisingly little. There is a marked tendency for the patient's chest to bulge when he coughs, and for the first few days after the operation this can be prevented by firm bandaging and padding, and by the presence of a special nurse who supports the chest when coughing occurs, while later on a moulded leather jacket or support is fitted, which presses the side of the chest in and reinforces the chest-wall.

Division of the Phrenic Nerve.

The operation of section of the phrenic nerve in the neck was performed for pulmonary tuberculosis many years ago; and although Keith has shown that the paralysis of the diaphragm produced diminishes the respiratory excursion of the apex as well as of the base of the lung, it did not in most cases produce very much benefit. We

have found that a section of the phrenic nerve may be performed in combination with a thoracoplasty with considerable advantage. It is best to perform this phenicotomy under a local anæsthetic two or three weeks after the major operation. It is a trifling procedure, and not only does it render the collapse of the lower half of the lung very much more complete, but inasmuch as it will cause a marked degree of elevation of the diaphragm, it is not necessary when doing the thoracoplasty to remove the lower ribs so extensively.

The Results of Surgical Measures.

The results of these extensive thoracoplasties have been very encouraging so far. When performed for uncomplicated pulmonary tuberculosis the improvement is marked and the mortality small. Although there is a considerable amount of deformity after the chest has fallen in, it is by no means as marked as might be expected, as the clavicle retains its position and holds out the point of the shoulder, so that the position of the scapula is very little altered. In any case, the deformity can only be noticed when the patient is stripped, as the clothing completely hides it. The operation of thoracoplasty has also been performed in several instances for the condition of tuberculous pyopneumothorax. In this case, however, it is a more difficult and severe operation, as the ribs have usually fallen in and are close together, and more adherent to the surrounding tissues. Moreover, here there is usually the addition of a marked septic element, and the mortality of the operation has been very much higher and its results much less encouraging when performed for this condition. It is a striking thing how well advanced tuberculous patients stand this somewhat severe operation, providing there is no sepsis in the pleura, and the case is one of uncomplicated tuberculosis of the lungs.

A SIMPLE METHOD OF OBTAINING SKIAGRAMS IN ARTIFICIAL PNEUMOTHORAX WORK.

By FREDERICK R. G. HEAF,
B.A., M.D. (CANTAB.),
Medical Superintendent, Warwickshire King Edward VII. Sanatorium,
AND
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Assistant Medical Officer, Warwickshire King Edward VII. Memorial Sanatorium.

ALL artificial pneumothorax work should be controlled by repeated examinations of the patient under the X rays, and if possible records should be kept of the condition of the chest on certain dates. The usual method of keeping such records is to take an X-ray photograph every two or three months. This method involves considerable expense and time, particularly if prints of the negative are desired to complete the clinical notes of the patient. When a large number of patients are receiving treatment, it becomes necessary to engage an assistant to do the photographic work; thus the expense of obtaining the necessary information is still further increased.

In order to economize both time and money, the following method was devised at the Warwickshire King Edward VII. Memorial Sanatorium, and is proving most successful. The apparatus required, in addition to the usual fittings to an X-ray oufit, is extremely simple. It consists of a clean, smooth gelatine film, made by washing off the photographic film of an old 15-inch by 12-inch negative, a roll of adhesive plaster, soft black and red grease pencils, black and red pastels, xylol, and sheets of typing paper the size of the gelatine film. The method of obtaining a record of the condition of the patient's chest is again simple, and requires very little practice. A good screen is obtained with about 1 to 3 milliamperes. The gelatine film is fixed over the centre of the fluorescent screen by three strips of adhesive plaster. The patient is placed in the usual position, and the fluorescent screen pressed firmly, but gently, on to the chest. The distance of the screen from the tube is noted and marked with the grease pencil on a corner of the gelatine film. The fluorescent screen is then fixed, and the current switched on.

The outline of the thorax, with the clavicles, the diaphragm and the heart, are quickly sketched on to the gelatine film with the grease

pencil. Then any definite lines made by the shadow of collapsed lung, fluid, or calcareous masses are marked. All these will be seen quite plainly through the film. The lower edge of the film is then released and gently raised, and the finer variations of the shadows on the fluorescent screen are observed. The film is then replaced, and as many as are thought necessary of these shadows are recorded. The marking of these finer details requires a little practice. The current is now switched off, and the film is removed. If necessary, the procedure can be repeated for the back view with another clean gelatine film on the fluorescent screen.

In practice it is found that the gelatine film tracing can be easily made in one minute, so that there is no danger of the patient being injured by the X-rays. The film is taken and placed in a viewing box, with a sheet of typing paper of the same size over it. The markings of the grease pencil are then traced on the paper with pastel and shaded with a shading stump, the result being a pastel tracing of the important shadows seen on the fluorescent screen. The paper is then removed from the viewing box, pinned on to a board, and the pastel fixed by pouring boiling milk evenly over it; it should then be hung up, and allowed to dry thoroughly; this prevents smearing, and makes the drawing permanent. This record, which we call a skiagram, is then named, dated, and filed. The films are carefully cleaned with xylol on cotton-wool swabs, and are ready for use again.

When information of the condition of the patient's chest is again required, the skiagram is placed in the view box, with a clean gelatine film over it. The main outlines are marked on the film with red grease pencil, paying particular attention to the position of the edge of the lung, or the surface of fluid, or any other feature that is of interest. The patient is placed in position for screening, and the film with the red tracing is fixed to the fluorescent screen, care being taken that the latter is the same distance from the tube as on the previous occasion.

The film is then adjusted so that the clavicles and outlines of the chest are superimposed on those of the patient under examination; this requires care. All variations of the position of organs are now marked with black grease pencil, and the process of obtaining a tracing is repeated, either on the original skiagram, using red pastel, or on a new piece of typing paper. The tracing is then fixed in milk, named, and dated, and so a second skiagram is produced. By this method we obtain a permanent series of pictures of a patient's chest, showing very clearly and with considerable accuracy the changes which have occurred in any particular condition under observation.

The method is recommended because it is simple, rapid, and economical, and although it probably will not be of use to the expert radiographer, we think it may be of use to many engaged in artificial

pneumothorax work who require a record to enable them to compare screen examinations without resorting to photography, which is a somewhat costly and lengthy process, and, unless done by a specialist, may give results which do not give the required information, and therefore does not justify the expense.

SUNSHINE AND SURGICAL TUBERCULOSIS.

By J. B. BARNETT,

M.R.C.S., L.R.C.P.,

Resident Medical Officer of the Country Branch of the Royal National Orthopædic Hospital at Stanmore, Middlesex.

"It ain't by principles, nor men,
My prudent course is steadied:
I scent which pays the best, and then
Go in for it bald-headed."

The above may be taken as the motto of the Country Branch of the Royal National Orthopædic Hospital at Stanmore, beyond Edgware. We are willing to try anything once, and being bound by no cramping traditions, or therapeutic formulæ, can select and alter methods at will, so long as they "pay" from the point of view of the patient. Each institution should evolve its own mode of sunlight therapy, governed by its environment, and so the methods used here are those we find most practical, and do not follow any particular school of thought.

The Rollier technique, most excellent, because practically fool-proof, has at least one disadvantage. The climate is so notoriously unreliable, that one is frequently left with children whose fractional exposure has extended no higher than the knees or hips, whilst sunshine has departed for perhaps many days. And seeing that the effect of heliotherapy is primarily local (hence, local pigmentation) it would seem that a small dose directed over a large area should be more effectual, and of more benefit to the patient as a whole, than a large dose applied to a small area. For this reason, we prefer the whole body to be exposed to the sun from the very first, commencing with a period of two minutes, and doubling the dose from day to day. Here, there is no arbitrary maximum exposure to sunlight. If the sun is hot and there is little wind, no patient is exposed for more than three hours. With weak sunshine or a strong wind six hours is not too much. As a rough index, fatigue is used. No child who complains of being tired is left in the sun, and sunshine is regarded as a stimulant, to be used with caution.

There are fallacies in the use of the degree of pigmentation as an index to the acquired resistance to tuberculous disease. For instance,

a girl of twelve at Stanmore, suffering from a tuberculous elbow, pigmented till she was the colour a mulatto, and at the same time, her elbow grew steadily worse, till excision was imperative. Radiography showed that the epiphysis of the radial head was a loose sequestrum, and this was confirmed at operation. The result is excellent.

It would appear that sun treatment is of the greatest value as a prophylactic agent, and in early cases of tuberculous disease. In late cases, particularly if secondarily infected sinuses, with or without amyloid disease, be present, exposure to the sun is singularly ineffective. That is to say, the patient may be brought into a more

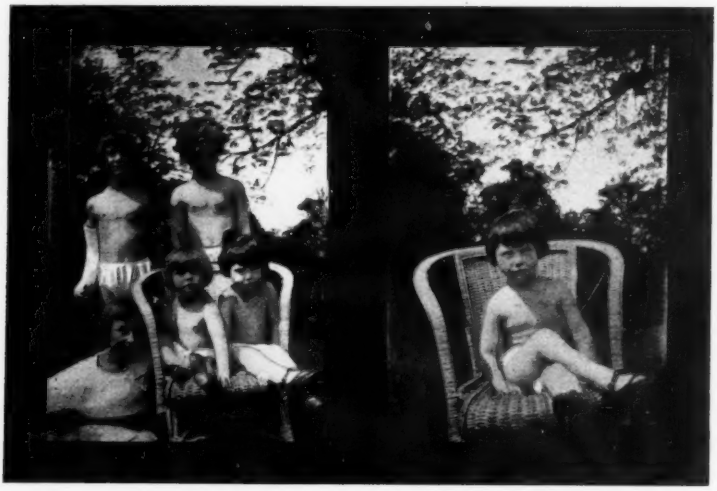
COUNTRY BRANCH AT STANMORE OF ROYAL NATIONAL ORTHOPÆDIC HOSPITAL: THE OPEN-AIR SHELTER AND HOSPITAL FIELD.

healthy general condition, but the effect of sunlight in aborting or curing the disease is so slow as to render its use practically impossible under the present economic conditions. Whatever may be claimed for certain Continental clinics in restoring structure and function, it is certain that in this country a period of cure by sunshine alone, varying from three to seven years in duration, is unpractical and economically unsound, and any other means of shortening the period of disability should be employed. This must not be taken to mean that patients are treated at Stanmore for only short periods—they are kept until no further improvement is probable, however long that may be—but the shorter the hospital treatment, the better for the patient.

In its local use, either *au naturel*, or by means of the Thézac-

Porsneur lens, the action of the sun's rays is little short of marvellous. Sinuses heal, deep abscesses consolidate, and stiff joints regain movement in a most dramatic manner. Yet, there are limitations. Sequestra should be removed *secundem artem*, and not be allowed to disintegrate during the passage of years. Bone abscesses must be cleaned out and the wounds closed, to heal by first intention. In fact, in the treatment of tuberculous disease of the bones, as distinct from joints, the nearer the operative procedure approximates to the treatment of chronic septic osteomyelitis, the better for the patient and for the institution.

We treat our cases of spinal caries by hyperextension on a plaster bed, and Albee grafts are now abandoned. Compression paraplegia, of



CHILDREN UNDERGOING SUN TREATMENT AT STANMORE.

which we have had more than our share, has reacted so quickly to extension that costo-transversectomy has only been employed here twice. Laminectomy for compression in Pott's Disease has never been done at Stanmore.

Tuberculous hips are treated, as a rule, by weight extension, with flexion of 20° at the hip, and 10° at the knee. The functional prognosis does not seem to be so good with hips as with other joints, and it has been found that a mobile hip is a source of greater satisfaction to the surgeon than to the patient. Tuberculous knees are either treated by extension, or in a bivalve plaster case. Our patients do not suffer from the extension of caries, and progressive wasting so graphically described by some observers as necessary sequelæ of treatment in plaster.

In conclusion, I venture to urge that the use of actinic rays should be regarded rather as a most valuable adjunct to surgical treatment than applied as a fetish. The results of operation performed in city hospitals can in no way be compared with those done upon sunburned

A LITTLE PATIENT AT STANMORE: END RESULT OF A CASE OF SPINAL TUBERCULOSIS.

children living day and night in the open air. So, a new standard for judging operative as against purely conservative treatment must be established. And the methods pursued at Stanmore are more than justified by the results. The accompanying illustrations give some idea of the methods used at Stanmore.

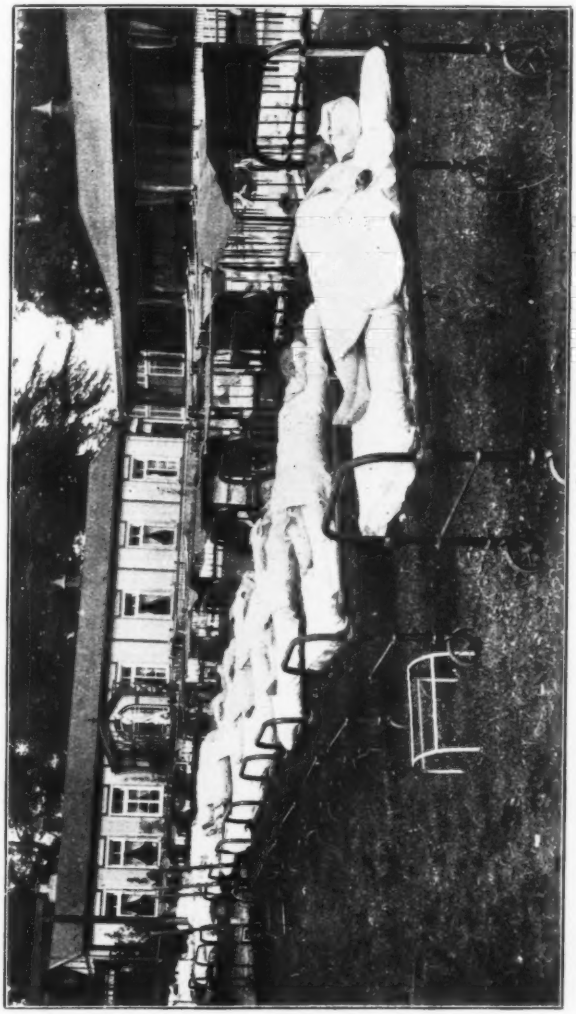
ASSOCIATIONS AND INSTITUTIONS.

ST. MARY'S HOSPITAL FOR TUBERCULOUS CHILDREN IN IRELAND.

THE committee of the St. Mary's Hospital, Cappagh, Finglas, Co. Dublin, the first hospital established in Ireland for the treatment of children suffering from surgical tuberculosis, have just issued their first report covering the years 1921–1923. Through the kindness of the visiting surgeon, Mr. Henry F. Macauley, F.R.C.S.I., we are enabled to publish the following description:

The institution is situated at Cappagh, about three miles from the nearest tram terminus in Dublin City. Though the main object is the treatment of surgical tuberculosis, other diseases which are particularly suitable for open-air treatment, such as rickets, or which require prolonged treatment, such as congenital dislocation of the hip, are admitted. The hospital only accepts children up to the age of ten years, and does not take cases with clinically detectable tuberculosis of the lungs. The hospital is under the care of the Sisters of Charity, and is run in connection with the Children's Hospital, Temple Street, Dublin, the largest children's hospital in Ireland, which is situated centrally in Dublin City, and which receives a large influx of cases from all over Ireland, and which therefore makes an ideal receiving centre. St. Mary's Hospital, which is the only open-air hospital for non-pulmonary tuberculosis in the Irish Free State, is built on the most modern lines, and at present accommodates eighty patients. The buildings are of one story, and consist of two large wards, operating theatre, schoolroom, and the usual annexes. The wards open on to a large balcony, which is partly covered by a roof, but otherwise freely open to the atmosphere. The children spend their lives on the balcony. Generally the beds are pushed out beyond the roof, and in wet weather they are withdrawn under the roof, while in very severe weather, possibly one or two nights in the year, they may have to be withdrawn into the wards. For treatment, the ordinary orthopædic methods are carried out as regards splintage, and heliotherapy is pushed when occasion allows. The open-air school is carried on by certified teachers, members of the order of the Sisters of Charity, and under a modified syllabus of the National Board. The children are detained for prolonged periods, and joint cases of the lower extremity are not discharged until they are capable of walking about in appliances such as the walking calliper; they are never discharged on crutches. A large portion of the surrounding country belongs to the Sisters, and is let in grazing, so that the air is not polluted by many neighbouring dwellings. A regular follow-up system is carried out, so that our past patients are visited every six months and reported on, and readmitted when necessary. As the accommodation is wholly inadequate, and there is a large waiting list, a much larger and more presumptuous building than the present one is in course of erection, and we hope will be shortly completed. How-

ever, there are considerable financial difficulties facing the authorities in this, as there is no building grant from the Government or other



ST. MARY'S HOSPITAL FOR TUBERCULOUS CHILDREN IN IRELAND.
Patients undergoing sun treatment.

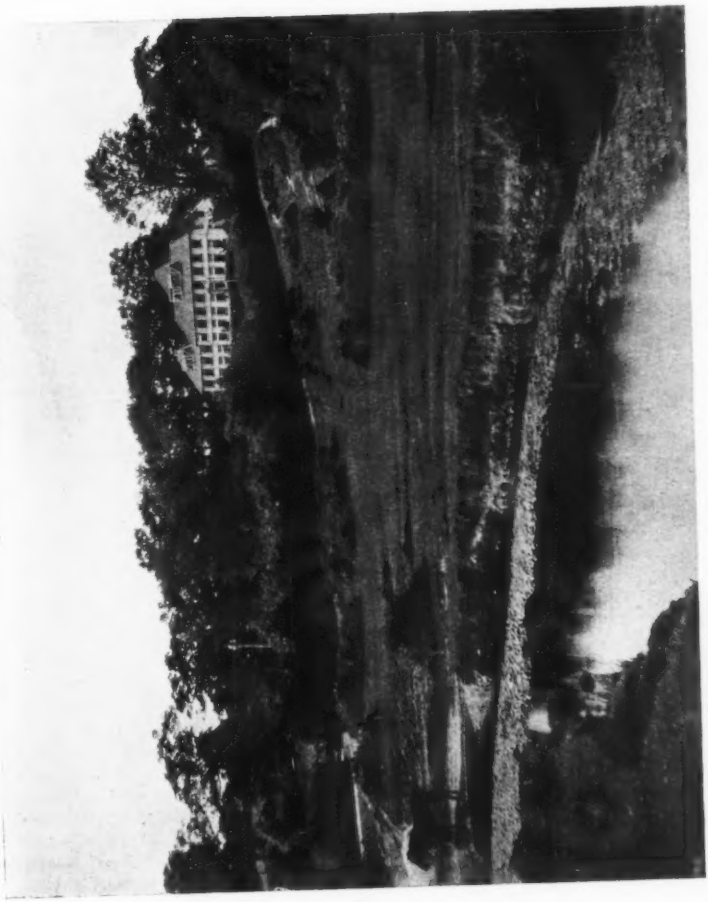
body, and the whole scheme, which is a very large one, has to be carried out by voluntary contributions. We carry on under great difficulties, as there is no organized scheme in operation in Ireland for the treatment of surgical tuberculosis, no inspection of school-children

so far, and no help from the Government. Besides, housing conditions are very bad, and we are forced to prolong treatment considerably on account of this.

THE LINFORD SANATORIUM, NEW FOREST.

LINFORD SANATORIUM was founded in 1897 by the late Dr. R. Mander Smyth, who had been a patient and assistant medical officer at Nordrach in the Black Forest, under Dr. Otto Walther. The sanatorium was one of the first in this country to be built and administered by a medical man with an intimate acquaintance with the actual methods of one of the great pioneers of sanatorium treatment. After spending much time and trouble in the choice of a suitable site, Dr. Smyth decided to build on the western boundary of the New Forest, fifteen miles north of Bournemouth. This situation on high ground offered a more bracing climate than did the districts nearer the coast, and yet retained all the advantages connected with a gravel and sandy subsoil. The main block of the sanatorium was erected on an open slope, commanding a wide view, and facing SSE. In addition to the chief building, there are now three annexes and several châlets, providing accommodation for thirty-seven patients. All the buildings are within a stone's throw of great woods of pine and oak, which extend many miles to the north-east, and furnish a variety of walks, sheltered from wind. North and south of the wooded Lin valley are moorlands, rising to 300 feet above sea-level, and affording wonderful distant views. The sanatorium has its own farm of eighty acres and forty acres of sheltered woodland. A herd of tuberculin-tested Guernsey cows is kept. The patients' rooms are heated by hot-water radiators and the châlets by anthracite stoves. Hot and cold water is laid on to the majority of the rooms, which also are provided with douche baths. Electric light and bells are installed everywhere, and all the buildings are connected with each other and the doctors' houses by private telephone. The dining hall, kitchen, and servants' quarters are detached from the patients' buildings. Three doctors live within the sanatorium grounds, one of whom is always on duty. Patients are visited by a doctor thrice daily, and are thus kept under close personal supervision. All patients are examined by X-rays soon after their admission, and a skiagraph is taken. Cases of artificial pneumothorax undergo frequent examinations as a help and guide to the treatment.

The Preston Hall Colony and Village Settlement, near Maidstone, for tuberculous ex-service men, conducted by Industrial Settlements (incorporated) has been transferred to the British Legion. In 1919 there were 35,000 ex-service men suffering from tuberculosis. About 1,442 cases have passed through the Colony. At present there are 45 occupied cottages and 25 in course of erection. The settlers number 222.



LINFORD SANATORIUM, RINGWOOD, NEW FOREST.

NOTICES OF BOOKS.

THE CHEMOTHERAPY OF TUBERCULOSIS.

PROFESSOR HOLGER MÖLLGAARD has written in collaboration with a number of Copenhagen colleagues a notable work on the chemotherapy of tuberculosis.[1] In attempting to review this remarkable book it is necessary to confine oneself to the main lines on which the Möllgaard gold salt treatment has been tested, and the main results so far claimed for it on experimental and clinical grounds. Nor is it proposed to give any historical survey of previous "gold cures," interesting though this would be were space available. For a precise consideration of the chemical nature of sanocrysin and the detailed history of its discovery the reader must directly consult Professor Möllgaard's work. Here it will suffice to say that sanocrysin or aurithiosulphuric acid is an inorganic gold compound, containing the negatively charged ion AuO_3S_2, to which its therapeutic powers are alleged to be due. It is a white crystalline substance, stable in the dry state, and rendered soluble in water, in which it gives an almost neutral solution. It is believed by its discoverer to be a highly diffusible substance, capable of slowly penetrating through the walls of the fibrous and granulation tissue by which tuberculous foci are surrounded, and even of accomplishing a gradual penetration of the avascular centres, where tubercle bacilli commonly pullulate. After intravenous inoculation, it tends to be retained in the body for at least four days, a point of considerable importance in its practical application; and, indeed, we already have evidence that it may remain in the liver and kidneys for many days and accumulate in them to a considerable degree under certain circumstances. Different schemes of dosage are given for different types of case; but, generally speaking, the initial dose consists of an intravenous injection of 0·5 grams of sanocrysin, dissolved in freshly prepared sterile distilled water, and it is usually found convenient to raise the dose to 1 gram or sometimes slightly more at subsequent inoculations. The interval between doses varies from three days to a week, according to the preference of the clinician, or to the particular characteristics of the individual case. In discussing the probable value of this remedy, it is well to begin, as Professor Möllgaard does, by considering the animal experiments on which its use is founded. For the most part Möllgaard has worked with calves, and the results recorded are remarkable. It was soon discovered, as indeed might have been anticipated, that sanocrysin, in leading to the destruction of a considerable proportion of tubercle bacilli present in the infected animal, liberated a varying amount of toxic bacillary body-substance, the result

[1] "Chemotherapy of Tuberculosis: Experimental Foundation and Preliminary Clinical Results," by Holger Möllgaard, Professor of Physiology in the Royal Veterinary and Agricultural College, Copenhagen, Denmark, in collaboration with Professor Dr. V. Bie, Dr. O. Chievitz, Dr. J. Gavesen, Dr. G. E. Permin, Dr. E. Secher, Dr. Strandgaard, and Dr. C. H. Würtzen. Pp. 419, with xxvii+xvii plates and figs. in text. Copenhagen: Arnold Busck, Nyt Nordesk Forlag, 1924. Price 25s. net.

being a formidable tuberculin shock, comparable in general terms with Koch's phenomenon. This tuberculin shock frequently led rapidly to the death of the infected animal to which the inoculation had been given. A marked difference, however, was observed between the behaviour of animals with chronic tuberculosis as compared with those suffering from more massive infections. In the former, where a considerable margin of acquired resistance might be expected to exist, the reactions were far less severe and much more successfully tolerated; whereas in the latter sanocrysin by itself was found to be as lethal as a large dose of tuberculin. In healthy animals equivalent doses led to no reaction at all. Möllgaard, guided by these observations, concluded that if sanocrysin was to be used clinically with success it would be necessary to use along with it the serum of an animal which had been immunized against tuberculosis, so that passive immunity against tuberculin shock might be conferred upon the subject under treatment. To this end he carried out progressive immunization of calves, and succeeded in obtaining a serum adequate to his needs. At a later date, on the publication by Professor Dreyer of details of the diaplyte vaccine, Möllgaard was able to obtain a still more potent anti-tuberculous serum by the use of diaplyte in the immunization of horses. Armed with the neutralizing serum, Möllgaard was now in a position to press on with his experiments on calves. He found that it was possible in animals which had been artificially infected by bovine tuberculosis some three weeks before, and which were already showing signs of the generalization of the disease, to bring about rapid death by the injection of a dose of sanocrysin, which was quite harmless to healthy animals. He found, on the other hand, that if an adequate dose of anti-tuberculous serum were given along with the sanocrysin, its lethal effects could be entirely prevented, and that the calves were able to tolerate repeated sanocrysin injections, accompanied where necessary by the neutralizing serum inoculations. Observing these latter animals in comparison with controls, he was able to prove that, while the control animals, infected at the same time and left untreated, died of progressive tuberculosis after the normal lapse of time, animals treated with sanocrysin and serum could be steered through the dangerous period, and within a few months be entirely restored to normal health. The beautiful histological preparations from treated and untreated calves, photographs of which help to illustrate the book, suggest that this claim is well founded, and it must be freely admitted that if Möllgaard's observations on calves can be successfully repeated by other observers, they may be claimed to constitute one of the most important advances ever made in the experimental treatment of tuberculosis. The latter half of the book is devoted to clinical researches on human beings by Dr. K. Secher of the Bispebjerg Hospital, Copenhagen, and other Danish clinicians. The drug, combined with the appropriate serum where necessary, has now been under trial for over a year, and some hundreds of cases have already been treated. It may be said at once that, as was to be expected from the animal experiments, sanocrysin is a preparation which can only be used with the greatest possible caution, since it is liable to give rise to marked reactions analogous with those produced by over-doses of tuberculin. It would appear that these can be avoided by the careful selection of cases on the one hand, and by the judicious exhibition of anti-tuberculous serum on the other. If we are to judge

by the reports of the Danish observers, it has been possible to bring about what appears so far to be clinical cure in a fairly high proportion of early cases. This statement should be taken with the reservation that such patients must be observed for several years at least before final conclusions can be drawn as to the permanence of the result. In advanced cases a relatively small proportion appear to have been much improved or even in a few cases cured; but it must be admitted that in many the progress of the disease has been accelerated, while several have died rapidly of tuberculin shock. The conclusions to be drawn from the records in Möllgaard's book appear to be as follows: Sanocrysin is a preparation of great activity in regard to tuberculous infection. The results reported both from animal experiments and clinical trials are sufficiently promising to excite hope that the drug may prove of high utility in the treatment of tuberculosis. It is certain that sanocrysin will have to be used with the greatest possible caution, and that its exhibition in unsuitable cases may well lead to regrettable results. There is the danger of "tuberculin shock" on the one hand and, although the author does not lay much stress upon it, the danger of metallic poisoning by a "cumulative" drug on the other. The experimental and clinical work, while suggestive, is by no means complete, and there remain many points to be solved by laboratory experiments and trial under skilled supervision in the wards. The evidence so far to hand, while promising, is by no means sufficient to justify final conclusions, and one must applaud the wisdom of the Medical Research Council in restricting the initial tests to a few centres where laboratory and clinical work can be combined. No one can read Professor Möllgaard's book without being struck by the frank and scientific exposition of all the facts both in favour of and against sanocrysin, and the full statements as to its exact chemical nature. This frankness and sincerity offer a fine contrast to the regrettable secrecy which has been observed in connection with some alleged "cures" for tuberculosis. Professor Möllgaard and his co-workers have placed all their cards upon the table, and it remains for the medical profession to find out in due course to what extent the new treatment is likely to be of help. Whether sanocrysin justifies the hopes that its first tests have raised, or whether, like so many other "cures," it proves to have only a limited application in practical medicine, the work of Professor Möllgaard has raised new issues, and has thrown new light upon the nature of tuberculosis.

S. Lyle Cummins, M.D.

A LIFE OF ROBERT KOCH.

A life of Robert Koch has recently been issued as one of a series of biographies of "Masters of Medicine," under the general editorship of Professor Max Neuberger.[1] The subject of this biography, needless to say, fully deserves a foremost place of honour among medical pioneers. His extraordinarily brilliant researches revealed numerous facts of fundamental and epoch-making importance in the science and art of healing and preventing disease. Apart from his discovery of the

[1] "Robert Koch." By Professor Dr. Martin Kirchner. With portrait of Robert Koch. Pp. 85. Wien und Berlin. Verlag Julius Springer. 1924. Price $0.70.

tubercle bacillus, his work in the domain of tropical diseases was instrumental in opening up a large portion of the globe hitherto uninhabitable. Moreover, he enriched the whole science of hygiene and preventive medicine by means of his important researches and discoveries in the field of general bacteriology. Professor Kirchner is fully qualified to act as Koch's biographer. For several years he was one of Koch's collaborators in the Berlin Institute of Hygiene, and he also had the good fortune of being the great master's confidential friend. Professor Kirchner has done his work concisely and well. The first chapter, which runs to six pages, deals with Koch's early life, his birth, education and marriage in 1867 at the age of twenty-three. Koch was a precocious child, and at the age of five years he astounded his father by his self-acquired ability to read a newspaper. On leaving the gymnasium (grammar school) at the age of nineteen, he decided to study philology, but fortunately for medicine he soon changed his mind, and after a short stay at Göttingen University in the Faculty of Science he transferred to the Medical Faculty, where he studied anatomy under Henlé, physiology under Meissner, and clinical medicine under Hasse. These teachers, in Koch's own words, "awakened in him the sense of scientific investigation." In the following five chapters, aggregating sixty-six pages, the author describes Koch's subsequent career as army doctor in the Franco-Prussian War, as district physician for Wollstein, as Professor of Hygiene at Berlin, as investigator, and as happy husband and the father of an only daughter. As district physician Koch became aware of the existence of cattle anthrax in his district, and began researches which culminated in his establishing the specificity of the bacilli previously described by Pollender, Brauell and Davaine, their cultural characteristics and their spore formation, which explained the origin and spread of this disease. Here the author narrates an interesting episode. Koch showed his discoveries to Ferdinand Cohn, of the Botanical Institute of Breslau, who was so impressed that he at once sent for his colleague and co-religionist Cohnheim, of the Pathological Institute, to see the "important and interesting thing" that Koch had shown him. Cohnheim in turn was equally impressed, and on returning to his department said to his assistants: "Leave your work at once and go to see the beautiful discovery made by Koch." Encouraged by this reception, Koch travelled to Berlin to lay his work before the great Virchow, "who, however, gave him the cold shoulder." Interesting details are given of Koch's researches in wound infections, relapsing fever, typhoid, cholera, leprosy, tropical diseases, rinderpest, horse-sickness, and tuberculosis, including his discovery of the tubercle bacillus. As an example of Koch's happy domestic life, the author quotes a letter written in 1876 to his then eight-year-old daughter Trudchen, from which the following is an interesting excerpt: "I wish you much luck on your eighth birthday. You will be a diligent pupil at school, and help your mother in the kitchen, tend the flowers and feed the animals, as well as assist me in cleaning the slides for my microscope. . . . You will do more and more of this as you get older, until at length Papa and Mamma will be able to sit in a cosy corner and our beloved Trudchen will cook for us, do our microscopic work, and write prescriptions. Ah! this will be a happy time." The last chapter of four pages describes Koch's last illness and his death from angina pectoris on May 21, 1910, at the early age of sixty-six. The

Kladderdatch (the German *Punch*), in an obituary verse, said that as in the midst of death Koch found life, he was called away at such a comparatively early age because Death was afraid of him. This little book is very simply and delightfully written, and can be most cordially recommended as a short and fascinating biography of a great master.

W. M. FELDMAN, M.D. (Lond.), F.R.S. (Edin.)

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

WE are glad to welcome a second edition of Dr. Jane Walker's concise, commonsense, practical manual on the nursing of cases of pulmonary tuberculosis.[1] The author is not only a pioneer in tuberculosis work and a long-experienced leader in all matters relating to sanatorium construction and management, but possesses intimate knowledge of and practical sympathy with tuberculous patients and those engaged in the difficult task of assisting in their supervision, education, and scientific treatment. Dr. Walker's informing and stimulating handbook reflects the personality and expresses the experience of the author in a simple, direct, and really helpful manner. It provides nurses with a lucid exposition of the responsibilities of the task of encouraging and caring for tuberculous patients. It is interesting to note that Dr. Walker does not hesitate to express her opinion that "the ordinary hospital-trained nurse is not of much use in a sanatorium for better-class patients. She is too apt to be full of preconceived ideas, and does not realize that a very large part of the cure depends upon cheerful surroundings." There are excellent chapters on Nursing in Sanatoria for the Poor, Private Nursing of Consumption, and Nursing Amongst the Poor. The Appendix contains a Syllabus of Training and Examination of Nurses in Institutions for Cases of Pulmonary Tuberculosis as drawn up by the Society of Superintendents of Tuberculosis Institutions, and a particularly valuable section on Hints and Helps to Patients Suffering from Pulmonary Tuberculosis, used in the East Anglian Sanatorium.

The many old students and the numerous friends of the President of the Royal College of Surgeons in this and other lands will be grateful to him for the handsome volume in which he has gathered and presented in particularly attractive form some of his most notable Orations and Addresses.[2] These include the Hunterian Oration of 1923, Hunter and Portugal, Surgery in the Eighteenth Century, The Surgery of the Future, Science and Surgery, The War Pathological Collection of the College of Surgeons, Spolia Nemoralia, Cranial Morphology, Choroid Plexuses, Arachnoid Tufts and Psammomas, Pacchionian Tumours and Cranial Exostoses, Choroid Plexuses as Secreting Organs, and the Habits of Tumours. Sir John Bland-Sutton has not only won world-wide distinction as a surgeon and an exponent of human and com-

[1] "The Modern Nursing of Consumption." By Dr. Jane H. Walker, Medical Superintendent of the East Anglian Sanatorium, Nayland, Suffolk, etc. Pp. viii + 75. London: The Scientific Press, Ltd., 28, Southampton Street, Strand, W.C. 2. 1924. Price 2s. 6d. net.

[2] "Orations and Addresses." By Sir John Bland-Sutton, Consulting Surgeon to the Middlesex Hospital. Pp. xii + 161, with Frontispiece Portrait of John Hunter and 51 figs. London: William Heinemann (Medical Books), Ltd., 20, Bedford Street, W.C. 2. 1924. Price 10s. 6d. net.

parative pathology, but he has travelled and observed and studied in many fields, and his writings and addresses are always full of new discoveries, rare truths, historical records of exceptional interest, suggestive scientific data, and notes on personal researches and professional experiences. And all, as is evidenced by the particularly instructive and interesting addresses and papers composing this beautifully produced volume, is set forth with literary grace and glints of quaint humour which, generally speaking, are all too uncommon in professional writing. The numerous illustrations add greatly to the attractions of an unusually appealing volume.

The late Professor Christian Saugman accomplished notable service for tuberculous sufferers and the scientific study of tuberculosis, and it is mainly through his wisdom and enterprise that during the past twenty-five years the Vejlefjord Sanatorium reached a front-rank position among leading institutions dealing with the subjects of pulmonary tuberculosis. Tuberculosis workers the world over will welcome the memorial volume just issued.[1] Dr. J. Ostenfeld, the Medical Director since 1916 of the National Association for the Prevention of Tuberculosis in Denmark, and Chief Assistant at Vejlefjord 1902 to 1907, provides an appreciation of his former chief. Saugman, like many another leader in the tuberculosis campaign, waged a long fight with tuberculosis, having shown signs of pulmonary trouble in his youth. Saugman was one of the first to be treated by Koch's tuberculin with what appeared to be prejudicial consequences. After long struggles Saugman became the first medical superintendent of Vejlefjord on March 1, 1900. The memorial sketch gives an admirable picture of Saugman and his work. Dr. H. Pugdahl-Sørensen has collected and arranged a bibliography of Saugman's writings The volume contains the following contributions: "Ætiological Studies taken from the Case-Books of Patients Treated at Vejlefjord Sanatorium under Professor Saugman," by Dr. P. Resen-Steenstrup; "Parallel Weekly Variations in Weight at Eight Danish Sanatoria," by Dr. N. J. Strandgaard; "Tuberculosis Dispensary Problems," by Dr. R. Kjer-Petersen; "A Review of Eleven Cases Treated by Thoracoplasty," by Dr. G. E. Permin; "Ten Years' Experience with Artificial Pneumothorax,"by Dr. Th. Begtrup-Hansen; "The Health of Children whose Mothers have had Sanatorium Treatment," by Dr. Kay Schäffer; "On the Sedimentation Reaction," by Dr. Carl Löwenhjelm; "Constitutional Causes of Hæmoptysis," by Dr. J. Chrs. Rahbek; "A New Method of Staining Tubercle Bacilli," by Dr. Pjetur Bogason; "Sanocrysin Treatment at Vejlefjord Sanatorium," by Dr. J. Gravesen. The volume is handsomely produced, and is issued by the Committee of "Sanatorier fors Brystsyge," Copenhagen.

Tuberculosis is best viewed and dealt with as a general disease in which one or more local lesions lead to the development of particular

[1] "Vejlefjord Sanatorium, 1900-1925." Compiled on the occasion of the twenty-fifth anniversary of Vejlefjord Sanatorium in commemoration of the late Professor Saugman, Founder of the sanatorium and Medical Superintendent from its commencement to the date of his death, February 7, 1923, previous assistants and co-workers at the sanatorium offering their contributions with the desire to pay their homage to their former teacher and chief in gratitude for much encouragement given, instruction received, and friendship enjoyed, March 1, 1925. London: John Bale, Sons and Danielsson, Ltd., Oxford House, 83-91, Great Titchfield Street, W. 1. 1925. Price 7s. 6d. net.

signs and symptoms, and call for special as well as general therapeutic measures. It is therefore essential that tuberculosis officers and all medical advisers called to deal with tuberculous cases should keep themselves thoroughly in touch with the progress of all matters relating to the recognition and prognosis and treatment of all manifestations of disease. It would be well if every practitioner would make a point of reading every year the admirable little work which through eight editions has borne the name of Hutchison and Rainy.[1] A new edition of this compact, reliable, up-to-date manual of clinical methods has recently been issued. With the passing of Dr. Rainy the responsibility for the present edition has fallen on Dr. Hutchison. The new issue contains numerous additions, including sections on the Fractional Test Meal, Van den Bergh's Test, the Estimation of Sugar and of Urea in the Blood, and the Urea-Concentration Test. Dr. John Parkinson has assisted in the rewriting of the description of cardiographic methods. There is a new and most excellent coloured plate showing the spectra of hæmoglobin and its derivatives compared with the solar spectrum. Much praise should be given to the chapters dealing with the examination of the chest, and we would direct special attention to the section descriptive of graphic methods, which can be used in recording conditions observed in cases of cardiac and pulmonary disease. The volume still appears in its customary attractive form and convenient size.

Tuberculosis is an infective disease, and both from the standpoint of practical service as well as scientific inquiry it is most desirable that doctors devoting themselves to the care of tuberculous subjects, and particularly tuberculous children, should keep themselves fully acquainted with all the evidences of other infectious diseases. It is only by keeping an informed, vigilant, and open mind that errors can be avoided. We would earnestly commend Dr. Rolleston's book on "Acute Infectious Diseases."[2] It is an ideal manual for both young and experienced practitioners, being based on the author's personal observations and experiences during a quarter of a century's study of the literature and direct investigation of acute infectious diseases. The work is restricted to a consideration of those diseases which are mainly or exclusively dealt with in isolation hospitals, and provides a particularly able exposition of the history, clinical features, and bacteriological and pathological aspects of diphtheria, Vincent's angina, cerebrospinal fever, whooping cough, typhoid fever, paratyphoid fevers, typhus, mumps, scarlet fever, measles, rubella, the fourth disease, erythema infectiosum, varicella, smallpox and vaccination. At the end of each chapter is a select bibliography. There are no illustrations, and many will doubtless regret the absence of temperature charts. The book should be in the hands of every general practitioner, and all who are responsible for the care of children will find it invaluable. Dr. Rolleston has produced a work of far-reaching service.

[1] "Clinical Methods: A Guide to the Practical Study of Medicine." By Robert Hutchison, M.D., F.R.C.P., and the late Harry Rainy, M.D., F.R.C.P.E., F.R.S.E. Eighth edition, revised throughout. Pp. xiii+688, with seventeen coloured plates and 150 figures in the text. London: Cassell and Co., Ltd. 1924. Price 12s. 6d. net.

[2] "Acute Infectious Diseases: A Handbook for Practitioners and Students." By J. D. Rolleston, M.A., M.D., Senior Assistant Medical Officer, Grove Fever Hospital, London, etc. Pp. vii+376. London: William Heinemann (Medical Books), Ltd., 20 Bedford Street, W.C. 2. 1925. Price 12s. 6d. net.

Dr. Carey Coombs of Bristol has published a particularly illuminating clinical monograph on "Rheumatic Heart Disease" which merits the serious study of all medical practitioners dealing with chest cases.[1] We would especially commend it to the consideration of those who are called upon to advise in regard to children and young persons. The author in this impressive volume has set forth in detail the conclusions arrived at during twenty years' personal study of heart cases apparently having a rheumatic origin. Dr. Coombs does not hesitate to accept the *Diplococcus rheumaticus* as the essential ætiological factor. He has worked at St. Mary's Hospital, London, with the late Drs. W. B. Cheadle and W. B. Lees, has proved himself a faithful disciple of Dr. F. J. Poynton, and also enjoyed exceptional opportunities of studying his subject at the Children's Hospital and the General Hospital at Bristol. Dr. Poynton provides a suggestive and sympathetic Introduction. All aspects of the subject are carefully presented in this elaborate study, and the evidence goes far to show that at least in early life invasion by acute rheumatism practically always means more or less cardiac involvement. The chapters on prognosis and treatment are particularly helpful, and medical officers of health, school doctors, and all interested in prophylactic medicine should specially consider the concluding chapter which deals with prevention.

One of the saddest aspects of tuberculosis occurring in early life is the permanent crippling which occurs so frequently when bones and joints are involved. During recent years conspicuous advancement has been made in regard to orthopædic measures for the correction of all forms of crippling and deformity. Colonel Tubby has provided a timely survey of the progress of orthopædic surgery since 1890, based mainly on his own personal observations and clinical experience. The volume consists of a reprint of articles originally published in the *Clinical Journal*.[2] They deal with the problem of crippling generally, the assistance rendered the surgeon by radiography, congenital and growth deformities, static and postural conditions, infantile and spastic paralysis, reconstructive, regenerative, and recreative surgery. The concluding chapter merits special attention, for in it is discussed the question of re-education of the cripple and the teaching and future of orthopædic surgery. At the end of each chapter is a serviceable bibliography. There are a number of carefully selected instructive illustrations. Colonel Tubby has rendered a real service by the preparation and issue of this timely, instructive, and stimulating volume, and we commend it to the attention of all medical practitioners interested in the prevention of states of crippling and the development of measures for the welfare of cripples.

Biochemistry is making such astonishing advances that in all departments of physiology and many realms of pathology and practical medicine our conceptions regarding health and disease have to be

[1] "Rheumatic Heart Disease." By Carey F. Coombs, M.D., F.R.C.P., with an Introduction by F. J. Poynton, M.D., F.R.C.P. Pp. xxiii + 376, with twenty plates and illustrations in the text. Bristol: John Wright and Sons, Ltd. 1924. Price 12s. 6d. net.

[2] "The Advance of Orthopædic Surgery." By A. H. Tubby, C.B., C.M.G., M.S., F.R.C.S., F.S.A., Consulting Surgeon to the Westminster, Royal National Orthopædic, Evelina, and Christ's Hospitals, etc. Pp. ix + 144, with thirty-one figures. London: H. K. Lewis and Co., Ltd., 136, Gower Street, W.C. 1. 1924. Price 7s. 6d. net.

extended and oftentimes revised. For all who would learn of the progress which has recently been made in our knowledge regarding the nature and manifestation of chemical processes in the human body we commend a perusal of Mr. T. R. Parsons' fascinating little volume on the fundamentals of biochemistry, of which a second edition has recently been issued.[1] The work opens with a discussion regarding the nature of living matter, and then follow studies on the constitution, chief varieties, properties, relationships, digestion, and metabolism of proteins. There are excellent chapters on the nitrogen exchanges of the body, purines, nucleo-proteins, uric acid, lecithin, and cholesterol. There are also illuminating expositions regarding the chemistry and utilization of carbohydrates, the pathology of carbohydrate metabolism, and the fuel requirements and energy output of the human machine. Mr. Parsons deals in a particularly interesting way with enzymes and their activities, accessory food substances or vitamins, protective synthesis, the pigments of the body, the respiratory gases, and applications of physical chemistry, including osmotic pressure, colloids, adsorption, and the functional importance of electrolytes. This lucidly expressed, up-to-date consideration of theoretical views and recently explored data, as evidenced by the above enumeration, will be sufficient to indicate to all students of biochemical processes in tuberculous subjects the interest and value of this able work. The contents of many of the chapters are cleverly summarized in schematic form, and to each chapter is appended a valuable select bibliography.

Scientists in all lands will ever honour the name of Pasteur, the real pioneer of bacteriology, the great master whose vision and researches have made possible the triumphs of modern surgery and the success of prophylactic medicine and serum therapy. The service he has rendered mankind is incalculable, and it is well that each generation should be reminded of the noble work of this benefactor of the human race. Professor S. J. Holmes has accomplished excellent service by providing present-day students and others with a short, concise, and picturesque life of Pasteur.[2] It is, of course, based on the standard "Life of Pasteur," by Vallery-Radot, and owes much to Duclaux's "History of a Mind," and also Roux's "L'Œuvre Médicale de Pasteur." Dr. Holmes writes as an enthusiast, but with sound judgment and keen discrimination, and furnishes young scientists with an inspiring account of Pasteur's personality and the wonderful results of his patient, painstaking, truth-seeking investigations.

The writers of medical monographs, theses, and contributions to scientific journals often lack literary skill and are wanting in knowledge and experience of technical and other matters relating to the construction of papers. To all such we commend the practical manual prepared by Miss Maud H. Mellish.[3] A study of this handbook should lighten

[1] "Fundamentals of Biochemistry in Relation to Human Physiology." By T. R. Parsons, B.Sc., M.A., Demonstrator in Physiology in the University of Cambridge. Second edition. Pp. xii+295. Cambridge: W. Heffer and Sons, Ltd. 1924. Price 10s. 6d. net.

[2] "Louis Pasteur." By S. J. Holmes, Ph.D., Professor of Zoology in the University of California. Pp. vii+246, with fourteen illustrations. London: Chapman and Hall, Ltd., 11, Henrietta Street, W.C. 2. 1924. Price 7s. 6d. net.

[3] "The Writing of Medical Papers." By Maud H. Mellish, Editor of the Mayo Clinic Publications. Pp. 155. Philadelphia and London: W. B. Saunders Company. 1922.

the responsibilities of editors and prove of service to readers. In twenty chapters there is compressed a vast amount of practical information regarding the preparation and presentation of papers, the arrangement of manuscripts, the correction of proofs, and all points connected with the construction and publishing of medical articles. The volume has been written by an expert, and will be invaluable to medical authors, especially the imperfectly trained and inexperienced, for the author has succeeded in compressing much helpful instruction into small space with accuracy and cleverness, thus providing just the direction and help which most medicals require. The manual contains a short bibliography and a serviceable reference list of standard abbreviations for medical journals.

"The Home Garden Books" provide much helpful information for all garden-lovers, and should be in the hands of those responsible for the laying-out and management of horticultural work in connection with sanatoria and the conduct of gardens associated with open-air schools. We would particularly commend Mr. Macself's commonsense, serviceable manual on the "A B C of Gardening."[1] It is not an alphabetically arranged guide, but consists of a series of twenty-five compact, suggestive, and instructive chapters, constructed primarily for beginners in practical gardening. The how and the why of horticultural procedures are lucidly explained in a manner which will be particularly helpful to arrested tuberculous patients and other delicate cases taking up horticultural pursuits. The book will also be of interest to experts and those who delight in what should be considered the most healthy and delightful of occupations. The work is produced in artistic form, and the numerous illustrations are particularly instructive.

Photography is a pastime for many patients who have to reside in sanatoria, live an open-air life, or seek health by residence abroad and suitably direct travel. All lovers of the camera desiring to keep abreast with progress in photographic affairs should secure a copy of this year's voluminous and really wonderful *Photographic Almanac*.[2] It contains an excellent epitome of all relating to recent events and advancement in the photographic world. There are also notes on new apparatus and materials, formulæ for the principal photographic processes, tables, and a directory of photographic societies, together with several special articles. The wonderful collection of advertisements alone makes this volume indispensable for reference.

The April issue of *Discovery* contains an article on "Elastic Glass," an organic substance designated "poll-opas," which would appear to permit the passage of ultra-violet rays of the sun.

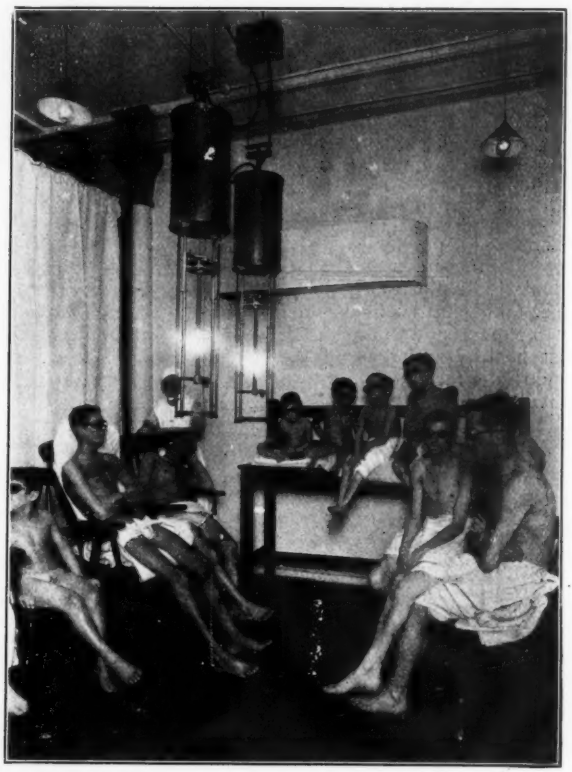
[1] "A Real A B C of Gardening." By A. J. Macself. Pp. 215, with coloured plates and other illustrations. London: Thornton Butterworth, Ltd., 15, Bedford Street, W.C. 2. 1924. Price 6s. net.

[2] *The British Journal of Photography, Photographic Almanac, and Photographer's Daily Companion*, with which is incorporated *The Year Book of Photography and Amateur's Guide* and *The Photographic Annual*. Sixty-fourth issue. Edited by George E. Brown, F.I.C., Hon. F.R.P.S. Pp. 815, with calendar and illustrations. London: Offices of *The British Journal of Photography*, Henry Greenwood and Co., Ltd., 24, Wellington Street, W.C. 2. Price: paper, 2s. net; cloth, 3s. net.

PREPARATIONS AND APPLIANCES.

EQUIPMENT FOR SANATORIA, HOSPITALS, AND DISPENSARIES.

In the last issue of this Journal illustrations were given of a number of lamps now in use for the carrying out of actino-therapy. We here draw attention to another lamp which is finding much favour, and



THE "WESTMINSTER" SUN-RAY ARC LAMP IN USE IN A LONDON HOSPITAL.

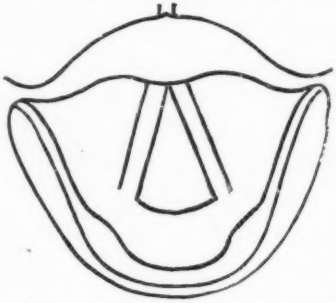
being employed in a number of institutions. The new "WESTMINSTER" FLAMING ARC LAMP is rich in ultra-violet rays and also in luminous and heat rays.[1] The electrodes are of the special white-flame type. If a greater intensity of ultra-violet light is desired tungsten-cored

[1] The "Westminster" Sun-Ray Lamp is manufactured by the Westminster Engineering Co. Ltd., Victoria Road, Willesden Junction, N.W. 10, from whom full particulars can be obtained on application.

electrodes can be used, which work smoothly in the lamp without spluttering. One pair of electrodes will burn for eight or nine hours without attention: about 70 to 90 volts is usually taken across the arc. Dr. Leonard Hill and Dr. A. Eidinow, of the Medical Research Council, referred to these lamps in the *Lancet* of June 21, 1924. The usual practice is to commence with exposures of five or ten minutes, three or four times a week, and increase the time to thirty minutes or longer, in some cases to one or two hours. Equally good results are given on both alternating and direct current circuits, the lamp being designed to work effectively on either.

THE "SUPER-SERLON" BINAURAL STETHOSCOPE.

The NEW "SUPER-SERLON" BINAURAL STETHOSCOPE, the chief features of which are indicated in the accompanying figure, is sure of a welcome from all medical advisers engaged in practice dealing with chest cases.[1] It is a greatly improved form of folding binaural stethoscope, and can be readily carried in the doctor's pocket; the lightness, portability, adjustability, and general excellence of design and construction mark this indispensable clinical appliance as one of the most reliable and serviceable forms of stethoscope.


THE ST. CLAIR THOMSON DIAGRAM OF LARYNX.

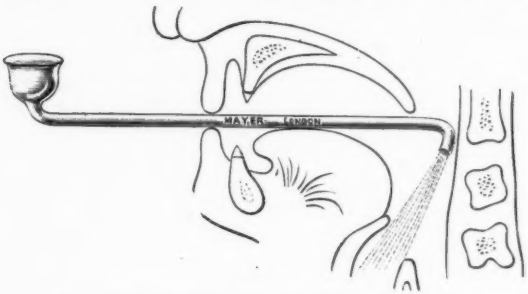
Acting on the suggestion of Sir St. Clair Thomson, Messrs. Mayer and Phelps have provided an improved rubber stamp DIAGRAM OF THE LARYNX, the chief features of which are shown in the accompanying figure.[2] Sir St. Clair Thomson says: "The conventional diagram of the larynx has descended to us from the early days when the chief interest of a laryngeal case was 'to see the cords' and anything growing thereon. This diagram was particularly unsatisfactory for displaying the interarytenoid region which, with the neighbouring area above each vocal process, is the most frequent site for the deposit of

[1] The "Super-Serlon" Binaural Stethoscope is supplied by the Medical Practitioners' Union Agency, 56, Russell Square, W.C. 1. Price 10s. 6d.

[2] The new rubber stamp can be obtained from Messrs. Mayer and Phelps, 58, New Cavendish Street, London, W. 1.

tubercle. Dr. H. Smurthwaite has most kindly come to my assistance with his artistic skill in making a design to my suggestion. The outline drawing here figured is, of course, semidiagrammatic, for it is impossible in the larynx to view both the interarytenoid region and the laryngeal surface of the epiglottis at one and the same time. Still, this conventional outline will enable laryngologists to indicate changes in any part of the larynx, including the posterior wall, both sides of the aryepiglottic folds, the sinus pyriformis, and the post-cricoid region—all of which are inadequately represented in the usual diagram of the larynx."

The THOMSON-LEDUC AUTO-INSUFFLATOR, as shown in the annexed illustration, provides a simple and effective means for the application



THE THOMSON-LEDUC AUTO-INSUFFLATOR.

to the larynx and trachea of orthoform or other agents in powder form as well as medicated oily fluids.[1] This appliance will be of much service in the treatment of tuberculous cases with marked laryngeal involvement.

META OUTFIT.

META FUEL AND APPLIANCES have found much favour in many countries among travellers, sportsmen, campers, and those who follow an open-air life. They are useful to meet household needs in the nursery, the sick-room, and elsewhere. Patients in sanatoria and teachers in connection with open-air schools and all classes of medical practitioners will find the Meta products invaluable. Meta is a solid fuel, a portable combustible, free from dangers of explosion or fire, and is available in convenient tablets or discs and round blocks, which can be stored indefinitely. Meta can be employed as a reliable fuel for heating in connection with cooking, the toilet, and hygienic and surgical procedures.[2]

[1] The Thomson-Leduc Auto-Insufflator is supplied by Mayer and Phelps, Chiron House, 61, New Cavendish Street, W. 1. Price 1s. 6d.

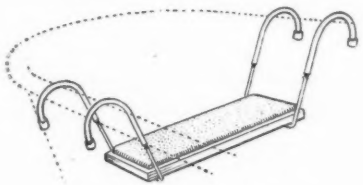
[2] Full particulars regarding Meta Fuel and Appliances can be obtained from the agent in Great Britain, Mr. Frederick Pratt, 66, Victoria Street, Westminster, S.W. 1.

Under the designation of the "REGALO" ATOMIZER, Messrs. Boots have introduced an all-glass appliance for the application of aqueous or oily solutions to the throat and nose.[1] The chief features of this serviceable atomizer are indicated in the accompanying figure. It can

THE "REGALO" ATOMIZER.

be used with either aqueous or oily solutions. The former should contain about one-quarter by volume of glycerine. This atomizer can be readily cleaned and sterilized, and is ideal for use in sanatoria and elsewhere, and especially for tuberculous cases. Being constructed of glass, it does not corrode, and is most useful for solutions containing iodine.

The well-known firm of Gamages are now making a feature of BATHROOM SPECIALITIES. Their bath seats and cork-covered stools such as are



A CORK-COVERED BATH SEAT.

A CORK-COVERED BATHROOM STOOL.

[1] Further particulars regarding the "Regalo" Atomizer, with solution for use with it, can be obtained on application to Messrs. Boots, Station Road, Nottingham. The price is 5s. 6d.

indicated in the accompanying figures will be found of particular service for patients in hospitals and sanatoria, as well as for invalids and delicate subjects in their own homes.[1]

Under the designation of THE MULTIPLE BOTTLE SPRAYER, an illustration of which is appended, Messrs. Robinson Brothers, Ltd., are now supplying an excellent appliance for the distribution in fine spray of disinfectants, deodorizers, and perfumes. It is also of service for the application of insecticides and for floral watering or bird cleansing. The sprayer is constructed of brass throughout (except, of course, the bucket leather and washers), heavily nickeled, and is provided with a ball-valve which makes the pump double action, the spray being therefore continuous, whether the piston is on the upward or downward stroke. The cork fitting is of the taper type, thus allowing of adjustment to almost any size neck of an ordinary 1-pint bottle. The base is fitted with a telescopic tube, which enables the sprayer to reach to the bottom of the container, and thus make use of all the liquid.[2]

THE MULTIPLE BOTTLE SPRAYER.

BEGASINS, now being supplied from Jersey, are a new style of footwear particularly suited to the requirements of patients.[3] They will be much appreciated by residents in hospitals and sanatoria and by convalescents in their own homes. Begasins are really novel and up-to-date slippers. They are available in a variety of forms, and possess many advantages. They are made from specially tanned sheepskins, and are soft, flexible, artistic, and extremely comfortable. Moreover, they can be worn on the naked feet, are readily slipped on and off, pack flat, and weigh only about four ounces.

THE RALLEY MILK JUG.

The new RALLEY PATENT MILK JUG, the general appearance of which is indicated in the accompanying figure, is an hygienic receptacle which should be of much service, not only in the ordinary home, but also in hospitals and sanatoria.[4] The jug is provided with a metal cover which, while allowing for ventilation, keeps out dust and flies and like contaminating agents. It is composed of white semi-porcelain, and is

[1] Illustrations and particulars of Bathroom Requisites can be obtained on application to A. W. Gamage, Ltd., Holborn, E.C. 1.

[2] The Multiple Bottle Sprayer can be obtained on application to Messrs. Robinson Brothers, Ltd., West Bromwich, Staffs. Price 3s. 9d., post free.

[3] An illustrated catalogue and price-list of Begasins can be obtained on application to the Begasin Slipper Company, 8 and 10, Broad Street, Jersey.

[4] The Ralley patent ventilated milk jug is supplied by "Tarpers," Ltd., Bank Chambers, 329, High Holborn, W.C. 1.

fitted with polished aluminium detachable cover. Various sizes are available—½ pint, 1 pint, 1½ pints, and 2 pints.

Under the general title of VULPRO there has recently been introduced an inexpensive, effective, and highly serviceable form of sterilizable waterproof sheeting, which will be found invaluable for use not only in hospitals and sanatoria, but also for domestic purposes. The basal fabric is rubber-proofed with vulcanized Lalex and is practically odourless. It is also light in weight, can be readily cleaned and sterilized, and is very durable. Vulpro can be obtained in many forms as pinafores, aprons, cushion and sponge-bag covers, tobacco pouches, etc., and used as sheeting, or made into any special form required for the patient.[1]

THE NATURAL CARLSBAD MINERAL WATERS and the well-known SPRUDEL SALT can again be obtained in this country. The Waters are bottled under the control of the Municipality of Carlsbad, who also prepare the Sprudel Salt in both powder and crystal forms. The Sprudel Salt is particularly convenient for administration to patients in this country. The Carlsbad Waters as well as the Salt are undoubtedly of much service in many cases of chronic tuberculosis, especially subjects who are affected with persistent gastro-intestinal discomfort and constipation, and other derangements of metabolism. For patients who have resided in the tropics and are liable to hepatic and renal affections, gout and malarial manifestations, Carlsbad Sprudel Salt is undoubtedly oftentimes desirable.[2]

OSTELIN is a new product introduced by the firm of Glaxo. It is the antirachitic active principle of cod-liver oil, extracted by a process developed at the Department of Pathology of Columbia University, New York, and covered by a patent under which the above firm has an exclusive licence in this country.[3] Although the vitamin can be obtained by this process in a concentration over 2,000 times that in which it occurs in the original oil, for general use it is put up in a glycerine suspension of such strength that 3 drops are, in antirachitic activity, equivalent to 1 drachm of cod-liver oil. Satisfactory clinical results have been obtained with this preparation both at Columbia University and in London. Its value lies in the rapidity with which calcium deposition, as shown by controlling X-ray photographs, is promoted by its use. It is to be hoped that with the appearance of this product, which offers the advantages of cod-liver oil without its unpleasant properties, there will be a much more general consumption of the bone-forming vitamin by expectant and lactating mothers, by artificially fed infants, and by children, with the result that rickets, poor bone development, and poorly formed teeth will be very much less common in the future than they are at present. It would seem probable that this agent will be of service in the treatment of cases of surgical tuberculosis, and especially in tuberculosis occurring in children and young and debilitated subjects.

Under the designation of "SKIPPERS," the well-known firm of Angus Watson and Co., Ltd., of Newcastle-upon-Tyne, specialists in canned

[1] Particulars regarding Vulpro can be obtained on application to Vultex Products, Ltd., General Buildings, Aldwych, W.C. 2.

[2] Specimens and particulars of the Natural Carlsbad Sprudel Salt and the Carlsbad Waters can be obtained on application to the British agents, Ingram and Royle, Ltd, Bangor Wharf, 45, Belvedere Road, S.E. 1.

[3] A booklet regarding Ostelin will be sent to any reader of this journal on application being made to the firm of Glaxo, 56, Osnaburgh Street, N.W. 1.

foods and preserved dietetic products, have introduced a form of canned fish which to all intents and purposes and for practical use can be considered a form of sardine.[1] They are, in fact, the Norwegian brisling, scientifically cured and packed in the highest grade of olive oil at the Imperial Canneries, Stavanger, in Norway. These "Skippers" are admirable for tuberculous subjects, stimulating appetite and providing a nutritious food, which can be served in many attractive ways.

Cod-liver oil is a particularly valuable agent in dealing with tuberculous children and many adult consumptives. In the old-fashioned form it was generally distasteful, and often produced nausea and digestive troubles. A particularly serviceable means for administering oleum morrhue is now provided by the MORUETTE COD-LIVER OIL TABLETS.[2] They contain the essential cod-liver oil extractives free from the unpleasant greasy elements with their disagreeable fatty acids. The tablets are particularly rich in vitamins, contain the valuable alkaloids, butylamine, amylamine, hexylamine, and dihydro-lutidine, and also the free bases morrhuine and aselline, together with cholesterol and lipochrome bodies, and small quantities of bromine, phosphorus, and iodine.

ROEBARYT is the name given to the preparation now available for the provision of a suitable meal whereby a reliable X-ray diagnosis can be made of the gastro-intestinal tract.[3] Its essential element is barium sulphate, and it produces a clear, sharply defined shadow with maximum contrast. Two forms of Roebaryt are available, one for oral administration and the other for rectal introduction. In many cases of tuberculosis of the abdomen, either active or obsolescent, it is often desirable that a reliable X-ray photograph should be obtained, and certainly Roebaryt will facilitate the work.

PYORRHOCIDE POWDER is a medicated antiseptic dentifrice which has found much favour in America.[4] Pyorrhœa is a morbid condition which is widely prevalent, and not only a fruitful source of dental troubles and the cause of much oral sepsis, but leads through the general toxic condition resulting to a number of serious affections such as arthritis, neuritis, hyperemesis, and gastro-intestinal derangements. Many tuberculous patients are the subjects of pyorrhœa, and in every systematic examination this morbid condition should be looked for, and, when found, effective treatment must be undertaken promptly. Pyorrhocide powder can be used like any ordinary tooth powder or paste as a local application for the teeth and gums two or more times daily. It is said to consist of white oak, elm, and Peruvian barks, precipitated chalk, and dentinol, which is a preparation containing cresol, oils of eucalyptus, birch, sassafras, capsicum, turpentine, camphor, alcohol, and ether. This dentifrice is a reliable prophylactic as well as a remedial and cleansing agent of great value.

[1] Particulars and prices regarding "Skippers" for use in hospitals and sanatoria can be obtained on application to Messrs. Angus Watson and Co., Ltd., Newcastle-upon-Tyne.

[2] Full particulars regarding Moruette Cod-Liver Oil Tablets can be obtained from the makers, Arthur H. Cox and Co., Ltd., Brighton. Trial boxes of twenty-four can be obtained for 1s. each, and treatment boxes of seventy-two for 2s. 6d.

[3] Roebaryt is made by the Saccharin-Fabrik Aktiengesellschaft vorn, Fahlberg, List and Co., Magdeburg, and can be obtained from their agents in this country, Ronsheim and Moore, 11A, Wormwood Street, E.C. 2.

[4] Pyorrhocide Powder is manufactured by the Dentinol and Pyorrhocide Company (Inc.) of New York, and is supplied in this country by Davis, Schottlander and Davis, 16 and 18, Beak Street, W. 1.

ZEDENO is a new form of porous sheath bandage, and has been introduced to provide protection and local treatment for varicose veins and varicose ulcers in cases which cannot be kept in bed or at rest, but must continue at work.[1] This novel form of medicated bandage has been introduced by Dr. Blanchod. It consists of a gauze bandage impregnated with zinc oxide and a form of aluminium—a kind of Unna's paste. It is supplied in a moist state ready for application, and dries speedily, taking the exact shape of the limb, and if there is no actual ulcer can be worn for some time. The active principle of the dressing is said to be aluminium aceto-tartrate. The dressing has found much favour abroad, and deserves thorough testing in this country.

CARBOLIC SOAP is a hygienic necessity in hospitals and sanatoria, and is an agent which goes far to aid in the maintenance of sanitary conditions in ordinary domestic life.[2] An excellent series of carbolic soaps in tablet and bar forms and in special varieties for use in disinfecting, scrubbing, and cleansing generally is provided by the well-known firm of Richard Wheen and Sons, Ltd. Those responsible for the management of hospitals, sanatoria, open-air schools, and other institutions will be well advised to make themselves acquainted with these soaps.

MARMITE is of much value in the treatment of tuberculosis, both in children and adults, as well as in other forms of debility and in marasmic conditions. It seems to aid in the assimilation of essential fats, for it is particularly rich in Vitamin B. It is prepared from yeast, and is very palatable, and can be used in the production of soups, stews, gravies, sandwiches, and the like.[3]

IODIZED TABLE SALT and SWEETS in the form of butterscotch are now being used as agents in the prevention of cretinism, myxœdema, and other forms of hypothyroidism.[4] The most important element in thyroid preparations would seem to be the iodine. In this country and in Switzerland, and various parts of America, iodine is being given systematically to school children. The iodized salt and sweetmeats introduced by Messrs. Boots provide a popular form for the administration of iodine. The salt contains $\frac{1}{20}$ grain per pound of iodine as sodium iodide, together with small quantities of calcium phosphate and light magnesia. The butterscotch drops are supplied in two strengths, $\frac{1}{10}$ grain and $\frac{1}{140}$ grain of iodine per sweet. It is generally recognized that iodine is of considerable value in the treatment of many cases of tuberculosis. For children threatened with tuberculosis of glands it would seem likely that these new preparations will be of real service.

GLUTIODIN is a new and pure iodized vegetable protein free from

[1] The Zedeno Bandage is supplied by Chas. Zimmermann and Co. (Chem.), Ltd., 9-10, St. Mary-at-Hill, E.C. 3, in metal case, with two complete dressings, Price 3s. 6d.

[2] Full particulars regarding carbolic and other disinfecting and cleansing soaps for hospitals and sanatoria can be obtained on application to Richard Wheen and Sons, Ltd., The Soapery, Deptford Creek, S.E. 8.

[3] Specimens of Marmite, with full particulars, will be sent to any medical readers of this journal on application to the Marmite Food Extract Company, Ltd., 59, Eastcheap, E.C. 3.

[4] The Iodized Table Salt is supplied at 9d. per jar; and the Iodized Butterscotch Drops cost 3s. 7d. per 2-lb. bottle. Full particulars can be obtained from Boots' Pure Drug Company, Ltd., Station Street, Nottingham. Under the title of "The Triumph of Iodine" appears an article by J. A. Goodfellow in the *New Statesman* for December 6, 1924.

all iodides, iodates, and other inorganic salts.[1] It is available in powder or in tablets. This preparation would seem likely to be of service in some cases of tuberculosis, and especially in those where there is a syphilitic taint.

IODEX is a valuable local iodine preparation which is of service as an unguent and is much used in the treatment of enlarged glands, arthritic affections, certain parasitic skin disorders, and a number of local inflammatory conditions.[2] In conjunction with the Thermolite Lamp it is of value in dealing with local states of congestion, and in stimulating phagocytosis and reparative processes.

EUMENTHOL JUJUBES made in Australia are a form of gum pastille containing eucalyptus polybractea, thymus vulgaris, pinus sylvestris, mentha arv., with benzo-borate of sodium, etc., possessing antiseptic and sedative properties.[3] They are very valuable in cases of oral sepsis and catarrhal states of the throat, and will be found of much service in the treatment of many tuberculous subjects.

SANOGYL is a new dentifrice prepared according to the directions of Dr. B. Kretchevsky and Dr. P. Segum.[4] It has been introduced as an effective prophylactic and remedial agent for patients and others threatened with or affected by pyorrhœa alveolaris and all forms of oral sepsis. In tuberculous patients mouth infection and inflammatory conditions, often with foul breath, are common, and sanogyl is a germicidal, deodorizing, and sedative agent which provides a pleasant and serviceable dentifrice and preparation for the maintenance of proper oral hygiene.

RUSSOLAX is a specially purified liquid paraffin made from genuine Russian oil.[5] It is odourless, tasteless, free from alkali, acid, sulphur, and all other deleterious substances, and is guaranteed to conform to the B.P. requirements. It is a local intestinal lubricant acting as a valuable agent in maintaining regular tone and action, and so avoiding chronic intestinal stasis and local and general consequences. It is valuable in the correction of constipation, so common in many tuberculous subjects.

ICILMA toilet preparations, including the cream, face and shampoo powders, and soaps, are admirable for the preservation of the hair and the protection and cleansing of the skin of the face, hands, and other parts of the body. For patients undergoing open-air treatment the members of the Icilma series are excellent.[6]

BATH MUSTARD is becoming very popular among all classes of sportsmen and open-air folk as a comforting and stimulating addition

[1] Glutiodin is manufactured by Mellin and Co., Food Works, Peckham, S.E. 15, from whom specimens and particulars can be obtained.

[2] Iodex is supplied in various forms by the makers, Menley and James, Ltd., Hatton Garden, E.C. 1.

[3] Eumenthol Jujubes are manufactured by Hudson's Eumenthol Chemical Company, Ltd., 31, Bay Street, Glebe, Sydney, Australia; and are supplied wholesale in this country by F. Newbery and Sons, Ltd., 27, Charterhouse Square, E.C., or retail by W. F. Passmore, 320, Regent Street, W.

[4] Sanogyl is supplied in this country by Sealand Trading, Ltd., 24, Holborn, E.C. 1, from whom full particulars can be obtained.

[5] Russolax is supplied by Reddgrave, Butler and Co., Ltd., Liquid Paraffin Specialists, Forest Lane, Stratford, E. 15.

[6] Full particulars regarding the Icilma Preparations can be obtained from the International Icilma Trading Company, Ltd., 37-45, King's Road, St. Pancras, N.W. 1.

to a hot bath taken after active exercise.[1] It seems likely to be of service in tuberculosis settlements and for patients who are so far restored as to be able to engage in agricultural pursuits and manual work. Certainly doctors and nurses engaged in open-air duties will find this preparation a very soothing addition to the bath at the end of a hard day's work.

Under the general designation of INNOXA there is now available an excellent series of hygienic and cosmetic preparations which are being extensively used in dermatological practice, and will be found of special service for use by patients undergoing open-air treatment.[2]

The well-known firm of John Gosnell and Co., Ltd., are providing an excellent series of high-grade cosmetic and hygienic preparations, which will be acceptable not only to the sound but for use by the sick.[3] We would particularly direct attention to their delightful Eau de Cologne, which is always much appreciated by tuberculous subjects. Reference may also be made to the Cherry Tooth Paste, which is a reliable and pleasant dentifrice and effective agent in the prevention of oral sepsis. The Cherry Blossom Toilet Powder is a very helpful agent for many consumptive cases.

Many consumptive and tuberculous patients are smokers, and to deprive them of all indulgence in tobacco frequently has an unsettling and oftentimes a depressing influence. Fortunately there are special varieties of tobacco and cigarettes which can be allowed even to delicate and tuberculous people without serious prejudice. Attention may be directed to the "ASORBAL" HYGIENIC CIGARETTES. These are hand-made in the model workshops of the celebrated firm of Dunhill by skilled operators and under strictly supervised hygienic conditions.[4] At one end of the cigarette is a filter of absorbent vegetable fibre, and this is covered with a special and patented paper so prepared as to prevent any adhesion to the lips. Cigarettes are available in skilfully blended forms made from both Viginian and Turkish tobacco.

In connection with springtide redecoration there are two preparations which merit special consideration: "LAKAMAL" is a reliable bath enamel, which gives a fine white porcelain enamel surface to baths, and is easily applied. The "UNIT" LIQUID PORCELAIN is a lacquer for the coating of taps and other metal work, and provides a pleasing, smooth, pure ivory-white surface.[5]

[1] A specimen and particulars of Bath Mustard may be obtained on application from the manufacturers, J. and J. Colman, Ltd. (incorporating Keen, Robinson and Co., Ltd.), Carrow Works, Norwich.

[2] Full particulars of the Innoxa specialities may be obtained on application to Innoxa, 15, Dover Street, W. 1.

[3] Particulars regarding the Gosnell Hygienic and Toilet Specialities may be obtained on application to Messrs. John Gosnell and Co., Ltd., 215, Blackfriars Road, S.E. 1.

[4] Particulars of the "Asorbal" Cigarettes may be obtained on application to the sole manufacturers, Alfred Dunhill, Ltd., 30, Duke Street, S.W. 1.

[5] Particulars regarding "Lakamal" and "Unit" Liquid Porcelain can be obtained on application to the makers, The Unit Manufacturing Company, Lakkerville Works, Hadleigh, Essex.

THE OUTLOOK.

THE TUBERCULOUS DISEASES DIPLOMA OF WALES.

UNDER the regulations of the University of Wales, the first external examiners for the *Tuberculous Diseases Diploma*, Sir Percival Horton-Smith Hartley and Sir Henry Gauvain, have retired in rotation after three years as examiners in medical and surgical tuberculosis respectively, and Dr. Clive Riviere and Mr. R. C. Elmslie have kindly accepted an invitation to take their places. The University of Wales has been fortunate in obtaining the services of such eminent authorities on tuberculosis to give the diploma its send-off and to maintain its high standard in the future. The examination, which was advanced to June in 1924 for special reasons, will this year be held on July 1, 2, and 3, in compliance with the procedure indicated in the prospectus issued awhile since. Courses of study for certificates (*b*) and (*c*) for Category B candidates can be arranged for during the months of April, May, and June on application to the Secretary, Medical Faculty, Welsh National School of Medicine, Newport Road, Cardiff; and these courses may also be taken at approved hospitals, laboratories, and medical schools elsewhere, a list of these being given in the prospectus for post-graduate diplomas of the Welsh National School of Medicine. Applications for entry to the examination should be addressed to the Registrar, University of Wales, Cathays Park, Cardiff.

NOTES AND RECORDS.

MR. NEVILLE CHAMBERLAIN, Minister of Health, recently in the House of Commons stated that formal notifications of tuberculosis are made to the medical officers of health of sanitary districts, and that although the medical officers of tuberculosis dispensaries receive lists of the notifications, only a proportion of the notified cases are applicants for treatment by local authorities. The number of cases of tuberculosis notified in England and Wales during each of the last three years for which returns are available is as follows: 1921, 71,702; 1922, 69,259; 1923, 79,388. The last figure included cases of which the medical officers of health became aware otherwise than by formal notifications, and is not, therefore, strictly comparable with the figures for 1921 and 1922. The following table shows as regards England and Wales (*a*) the number of tuberculous persons receiving treatment in residential institutions from local authorities, and (*b*) the number of beds in approved residential institutions, on the dates shown:

	(*a*) *Persons.*	(*b*) *Beds.*
January 1, 1923	15,563 ...	20,629
„ 1924	16,918 ...	21,419
„ 1925	18,158 ...	22,086

The Minister of Health also dealt with the death-rate from all causes per 1,000 persons for the last year. As regards the death-rate from tuberculosis per 1,000 persons, the figures for 1923, the last year

for which both rates are yet available, are as follows: Death-rate from all causes per 1,000 persons, 11·582; death-rate from tuberculosis (all forms) per 1,000 persons, 1·062.

Dr. F. Morin, President of the Swiss Tuberculosis Association and of the International Anti-Tuberculosis Union, died recently. He was the organizer and President of the International Anti-Tuberculosis Conference held at Lausanne last year.

Dr. A. Rollier and his colleagues since 1921 have conducted each year Post-Graduate Courses at Leysin, but the clinics are now so full, and the waiting-list of patients desiring admittance is so long, that with much regret Dr. Rollier finds it impossible to arrange for a Course this summer. It seems desirable to make this announcement, as many medical practitioners from this and other countries are anxious to enjoy the benefits of a course of instruction at Leysin.

At the forthcoming Annual Congress of the Royal Institute of Public Health, at Brighton and Hove, May 27 to June 1, various aspects of the Tuberculosis Problem will be discussed. Particulars on application to R.I.P.H. Headquarters, 37, Russell Square, W.C. 1.

The Harben Lectures on "Phthisis and Industrialism (National and Occupational) with Reference to Other Infectious Diseases," delivered by Professor Edgar L. Collis, appear in *The Journal of State Medicine* for March and April.[1]

A Provincial Meeting of the Tuberculosis Society[2] was held on April 2 to 4, in the Pathological Lecture Theatre, Cambridge. The programme included the following communications: "Treatment of Disease with Heavy Metals and Bactericidal Agents," by Professor W. E. Dixon; "X-Rays in the Diagnosis of Pulmonary Tuberculosis," by Dr. Lynham; "End Results and Limitations of Artificial Pneumothorax" and "The Rôle of Thoracoscopy, Thoracoplasty and Other Surgical Procedures," by Dr. R. C. Matson of the American National Tuberculosis Association; "Forms of Arthritis Simulating Tuberculosis," by Mr. Harry Platt; "The Present Position of Light Treatment in Surgical Tuberculosis," by Sir Henry Gauvain; "Racial Susceptibility and Resistance to Tuberculosis," by Dr. Louis Cobbett. There were also Demonstrations of Pathological Specimens, provided by Dr. L. Cobbett and Dr. Stanley Griffith; and a visit was paid to the East Anglian Sanatoria at Nayland, on the kind invitation of Dr. Jane Walker.

The Eleventh Annual Conference of the National Association for the Prevention of Tuberculosis will be held in London, on Monday and Tuesday, July 6 and 7, and the chief subject under consideration will be "Tuberculosis in Childhood." The opener of the discussion will be Professor Pirquet, of the University of Vienna. The afternoon of the second day, July 7, will be devoted to addresses on the "Treatment of Tuberculosis by Sanocrysin," by Professor Holgar Møllgaard, Professor of Physiology, Royal Veterinary and Agricultural College, Copenhagen, and Professor Knud Faber, of the University of Copen-

[1] *The Journal of State Medicine* is the official journal of the Royal Institute of Public Health, and is published at 37, Russell Square, W.C. 1. Price 2s. net each number.

[2] All particulars regarding the Tuberculosis Society can be obtained on application to the Hon. Secretary, Dr. F. J. C. Blackmore, 138, Herbert Road, Plumstead, S.E. 18. Meetings are held monthly, October to June.

hagen. The meetings will be held in the Robert Barnes Hall of the Royal Society of Medicine, 1, Wimpole Street, W. 1. The Conference is open to all persons interested in tuberculosis on payment of a fee of one guinea, which includes a copy of the report of the proceedings. It is hoped that reduced railway fares will be available from all parts of the country to London. The Minister of Health will be prepared to sanction under the Local Authorities (Expenses) Act the payment of the reasonable expenses of not more than three delegates, among whom should be included the Medical Officer of Health or Chief Clinical Tuberculosis Officer or both, from County Councils, County Borough Councils, Joint Tuberculosis Committees, and Metropolitan Borough Councils. Further particulars may be obtained on application to Miss Freda Strickland, 20, Hanover Square, W. 1.

The last ordinary meeting of the Society of Superintendents of Tuberculosis Institutions was held on March 23, when a paper was read by Dr. R. E. Wodehouse, Secretary of the National Tuberculosis Association of Canada, on tuberculosis work in Canada. Dr. Noel D. Bardswell presented a communication regarding the results of an experiment in settling tuberculous men on the land. A discussion was initiated by Dr. Andrew J. Shinnie (Westminster) and Dr. Esther Carling (Peppard) on the weak points in the present scheme of treating tuberculosis at the public expense.

The last meeting of the North-Western Tuberculosis Society was held in Manchester on March 26, when a demonstration was given by Dr. G. H. Lancashire on tuberculous skin cases and methods of treatment, including actinotherapy.

A considerable extension of health insurance benefits in tuberculous cases has been advocated by the London County Council General Purposes Committee. They recommend that the Royal Commission on Health Insurance should be asked to give consideration to the questions whether—(1) Grants should be made from national health insurance funds in aid of approved work centres at which post-sanatoria cases could be employed under the medical supervision of the tuberculosis officer. (2) The statutory maximum period of sickness benefit should be extended in the case of tuberculous persons. (3) Allowances should be made from insurance funds to tuberculous insured persons capable of part-time but incapable of whole-time work. (4) The surpluses available under the National Health Insurance Act for "additional benefits" should be utilized in part for certain benefits in kind, financial aid, etc., on a similar basis to the provision made for ex-service men by the British Red Cross and United Services Fund.

Professor Moellgaard contributes an important article on "The Theoretical Basis of the Sanocrysin Treatment of Tuberculosis" to the *British Medical Journal* for April 4.